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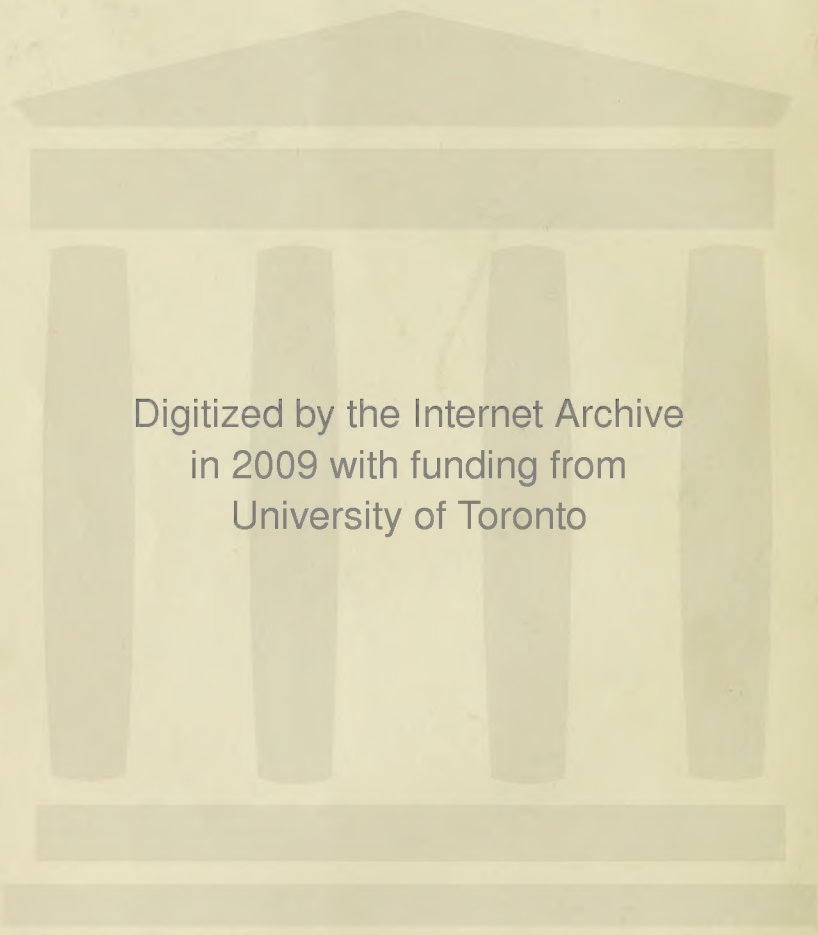
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The Canadian Medical Association Journal

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THE CANADIAN MEDICAL ASSOCIATION
1919

enable him to render the best service to the profession in general and the Association in particular.

The following is a list of the Executive as now constituted:

President, Dr. F. W. Marlow, Toronto; first vice-president, Dr. J. H. Mullin, Hamilton; second vice-president, D. J. H. Farley, Trenton; honorary treasurer, Dr. G. Stewart Cameron, Peterboro; Hon. secretary, Dr. T. C. Routley, Toronto; Dr. J. A. Macgregor, London; Dr. E. R. Secord, Brantford; Dr. George S. Burt, Owen Sound; Dr. J. P. Morton, Hamilton; Dr. F. A. Clarkson, Toronto; Dr. T. S. Farncomb, Trenton; Dr. H. A. Boyce, Kingston; Dr. Fenton Argue, Ottawa; Dr. Edgar Brandon, North Bay; Dr. E. B. Oliver, Fort William.

It was also decided at this meeting that the fortieth annual meeting of the Ontario Medical Association would be held in Toronto on May 26th, 27th and 28th, with the Committee on General Purposes meeting on May 25th.

With regard to University Post-Graduate Extension Courses, it was decided to advise the committee in charge of this department to at once get into communication with the various medical faculties and the proefssion at large, in order that good may accrue to the profession. Members of the profession have already been selected to address district and county society meetings, and it is hoped that in the very near future a bureau will be established in the secretary's office which may be utilized by all local societies desiring the services of outside men to address them.

At an early date, each county and local society will receive definite instructions, accompanied by an application form for affiliation with the Ontario Medical Association, and it is particularly hoped that every society will give this important matter the attention which it deserves.

In order that the profession may be kept properly informed as to the activities of the Ontario Medical Association and the work of its Executive during the year, it was decided to have the report of the last business meeting of the Association printed for distribution to the county societies, and also to have synopses of the points of interest decided at Executive meetings forwarded to the various medical journals for publication.

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The Canadian
Medical Association Journal

Vol. IX. JANUARY, 1919 No. 1

WAR ACTIVITIES IN MEDICINE AND SURGERY

THE ADDRESS OF THE PRESIDENT, ACADEMY OF MEDICINE, TORONTO

By A. Primrose, C.B., M.B., C.M. (Edin.)
Colonel C.A.M.C., C.E.F.

TWELVE years have passed since the Academy of Medicine was brought into existence by an act of incorporation amalgamating the various medical societies which existed in Toronto, as individual institutions, in 1907. The objects of the Academy, as set forth in the Declaration of Incorporation were "the advancement of the art and science of medicine with its collateral branches; the promotion and maintenance of an efficient library and museum; professional improvement; the cultivation of harmony and good feeling among its fellows; and the promotion of the corporate influence of the profession in relation to the community". We may confidently assert that the objects aimed at have been attained, in some respects with greater success than we had anticipated. I appreciate the honour which has been conferred upon me in electing me to the President's chair, and in thanking you I can only say that my aim will be to justify to the best of my ability the confidence you have thus placed in me.

The Academy of Medicine constitutes to-day an essential and vital force in the medical fraternity of our city and neighbourhood. We should endeavour to foster good feeling and confidence among our colleagues in the profession and by the progressive character of our efforts to cater to the needs of medical men, we should make ourselves indispensable so that, as a matter of course,

every practitioner of good standing in the community will seek to enrol his name on the list of fellows. Our aims must be laid on broad lines; we should enlist the aid of workers in the allied sciences and utilize in particular laboratory investigations in their application to medicine. We are fortunate in being in close touch with the Provincial University and we are able to utilize to the full the advantages which accrue therefrom.

No institution existing in this country can fail to be affected by the far reaching influences of the war. It affects the Academy of Medicine in a variety of ways. Of our membership of five hundred and five, there have been one hundred and thirty-two on active service, of whom one hundred and eight have served overseas. Of those who have seen service overseas, there have been three killed in action or died while on service. There have been a number wounded. Some of our members were at the Front in France in the autumn of 1914 and some of these are still overseas, having been on continuous service abroad ever since.

Practically all the officers of the staff of the University Base Hospital at Salonica were members of this Academy. Others have served at the Dardanelles, in Mesapotamia and in Egypt. Some have done duty as medical officers on transports, and others in His Majesty's Navy.

The men who have had the good fortune to have seen service at the Front have been profoundly influenced by their experiences. On their return home they cannot fail to make that influence felt in turn in the Academy. Let us enquire for one moment in particular as to the effect produced in an institution like this by the returned soldier, instead of merely dealing in generalities such as are often indulged in, sometimes in ardent anticipation, often as a threat, when contemplating the influence which such men will wield in the political sphere and in the various activities of the life of the community as a whole.

We may assert the fact, universally recognized, that the experiences of this war have had revolutionary effects upon the practice of medicine and surgery. Many of our members have done pioneer work in the gradual evolution of efficient methods for the treatment of the wounded and sick as well as in the prevention of disease among our troops. It would be invidious to mention names, and if we did so we would be apt to do injustice to the work of many whose particular contribution to the medical service of the army is as yet not fully known to us. We can state, however, that many of our members have had no small share in the intro-

duction of methods at the Front which have been not only of immense service in maintaining efficiency and in preserving the health of our troops during the war but which will have an effect, such as we may truly describe as revolutionary, in the future practice of medicine and surgery in peace time.

In the prevention of disease our sanitary officers have done their full share. They have played their part with marked efficiency by utilizing methods at the Front which have made the experiences of this war, in the incidence of disease, different from all former campaigns. It may be confidently asserted that this war would long ere this have been prematurely terminated, as has been the case in previous wars, by infectious diseases and the ideals for which we are fighting would have thus been sacrificed, had we not learned and practised effective means for the control and prevention of disease.

Those who have seen service in the East have had the opportunity of studying tropical diseases: dysentery, malaria, relapsing fever, para-typhoid and other more rare affections. These have been carefully studied in the laboratory and in the wards. As a surgeon I am perhaps more impressed with the revolutionary effects, or should I rather call it evolutionary effects of the experiences of this war upon surgery. Many of our pet theories regarding the ætiology and the prevention of infection in wounds have gone by the board. So, too, we have abandoned many of the methods of treatment which we considered formerly as essential to success. Perhaps the greatest benefit conferred on surgery is the atmosphere of scepticism which has been developed. In our arduous and concentrated efforts to discover Truth we realize, as never before, that we have arrived at no finality. The surgeon to-day, if he is to reap the full benefit of the experiences of the war, must have an open mind; he must be able to adapt himself to entirely new ideas regarding the healing of wounds; the resistance of serous surfaces; such as the large joints to infection; the possibilities of extensive operations on such organs as the lung and the great blood vessels, the methods of repair of the skull, when large portions have been destroyed; methods of dealing with wounds of the cranial contents; the marvellously ingenious methods of repairing those distressing and disfiguring wounds of the face and jaws and a host of other things which have advanced the practice of surgery in four years at a colossal rate. My contention is that the surgeon to-day has an entirely different view-point from what he had before the war. He is compelled to be more scientific and less empirical in his

methods. He must be progressive. The experiences of the present war will have their effect upon the practice of surgery for all time to come, in civil as well as in military practice.

During the past year there has appeared in the press an important contribution to the history of medical science in the "Life of Lord Lister", by Sir Rickman Godlee. The very wide appreciation of this book has made it necessary to issue a second edition, within a year of its first publication. What has always impressed one with the life and work of Lister, perhaps more than anything else, is the progressive spirit which he so splendidly displayed. In the establishment of scientific facts and their application to the practice of surgery he reached no final goal, but many times expressed his belief that the methods he introduced would be improved upon in the future. With prophetic insight he referred to the possibility of employing a technique which has in recent years been elaborated and termed "aseptic surgery". He shared the spirit of John Hunter who remarked to a pupil on one occasion: "Do not write down that observation—I shall probably change my mind next year." Unfortunately the pupils of a great teacher —and all surgeons are pupils of Lister—are apt to be satisfied with the conclusions arrived at by the Master. We should learn from Lister to be progressive and attempt to build on the scientific foundation he so splendidly laid when he enunciated the principles of antiseptic surgery, adding a superstructure which will continue to be an ever increasing monument to his genius and fame. It is a truism to state that the remarkable advances in surgery during the present war would have been impossible if Lister had not lived and worked.

We may give some specific illustrations of the advances made in surgery. The incidence of tetanus in this war has proved the value of the experience we have gained in the treatment of the wounded in the present campaign. A study was made of the number of cases which occurred in home hospitals among the wounded returned from France. In October, 1914, there were thirty-two cases per thousand wounded. In November, 1914, there were two cases per thousand and during the subsequent two years the average number per month only reached one per thousand wounded. There were several factors which produced a very large number of cases of tetanus in September and October, 1914, such as the character of the soil in the fighting area; the heavy fighting with its heavy toll of wounded; the difficulty of properly caring for the wounded, etc.; but it was not until the middle of

October that prophylactic inoculation was introduced in anything like a complete scale. Immediately a remarkable fall in the incidence of tetanus occurred, the number occurring being less than one thirtieth of those prior to the employment of prophylactic treatment. But experience has led us to further conclusions, and we find that antitetanic serum is curative as well as preventive in its value.

Large doses of the antitoxic serum are given by the intrathecal route immediately on tetanus manifesting itself. From 50,000 to 100,000 units may be given in the first few days, the object being to saturate the body with antitoxin as quickly as possible. The curative value of such treatment has been determined in many instances. Then again we have learned that the bacillus of tetanus may remain encapsuled within the tissues for prolonged periods and may, independently of any fresh traumatism, cause a recurrent attack. This is very prone to occur as the result of any secondary surgical operation and in certain specific instances has brought about fatal results.

Our knowledge of gas gangrene, its ætiology, prevention, and treatment has been greatly advanced. Its spread along lymph spaces and the invasion of damaged muscle fibrils; the absence or scanty occurrence of leucocytosis; the proliferation of endothelium with thrombosis of veins resulting in rupture of vessels with extravasation of blood and rapid spread of infection; the characteristic appearance of certain cases in *x*-ray plates, are some features of this infective process regarding which our knowledge has been greatly increased.

The treatment consists first in prophylaxis; encouraging personal cleanliness in the soldiers, treating trench walls with slaked lime, etc. Every wound should be looked upon with suspicion and should be submitted to immediate and thorough cleansing, the use of antiseptics and the removal of all foreign matter. Particular attention is paid to the removal of all lacerated muscle tissue, and all fragments of bone and the securing of complete hæmostosis. If gas gangrene supervenes, the entire wound is freely opened up in all its ramifications, all dirt and foreign matter is sought for and carefully removed. Hæmotomata which may lodge infection are eradicated, all contaminated muscle tissue is widely excised and hæmorrhagic oozing carefully checked. Free incisions are made in the long axis of the limb, all tension is relieved and the wound is left freely open avoiding all pressure and possible constriction of blood vessels, free drainage is provided and the

wound irrigated with a potent antiseptic. If amputation is considered necessary the flaps are left widely open without suture.

The results obtained by such treatment may be illustrated by those published by Ivens. Of four hundred and sixty-four cases of gas infection, forty-two were fatal, twenty-five died from gangrene, four died from tetanus, and the rest from severe injuries which they had sustained. When the gangrene was limited to a group of muscles it was possible in forty-one cases to do a local excision: of these thirty-three recovered. Amputation by the open method and with lateral skin incisions was practised sixty-five times; forty-eight of these recovered.

One other noted example may be mentioned of advances made in this campaign; for the first time in war the transfusion of whole blood has been employed. It is of special interest to record the fact that Canadians were the first to employ this life saving measure at the front. No treatment has been more spectacular or effective in cases of hæmorrhage.

The War Museum which is to be established at Ottawa is an undertaking of great national importance. Already, on an extensive scale, arrangements have been made to assemble a collection of the various implements of war. We understand the French Government, for example, has undertaken to make large contributions to the museum, which will consist of war materials of all sorts illustrating the varied activities both at home stations and in the field. The museum will be suitably housed in buildings which are to be constructed for the purpose. The section devoted to the medical aspects of the war will contain an exhibit of great importance. It will constitute a permanent record in Canada of the part played by the Canadian Army Medical Corps. This collection will be of great educational value. From it materials may be obtained from time to time by teaching institutions and by such bodies as this Academy when they are required for purposes of illustration and instruction. We are familiar with some of the work which has been done in connection with this project by our Canadian hospitals in England. At our solicitation, money was provided by the Dominion Government and at Orpington we secured the services of a group of experts consisting of an excellent sculptor, who reproduced very beautiful models in wax illustrating the various stages of such wounds as those of the face and jaws, from the condition at the time the wound was inflicted up to the final processes of repair. Similarly, wounds and injuries of other parts of the body are reproduced in wax. Then we have an expert who

makes plaster casts, another who is an artist in making coloured pictures in pastels, yet another who specializes in coloured photography, transparencies, and in the production of cinematograph films. Care is taken in the *x*-ray department to preserve and convert into lantern slides the large amount of valuable material which is collected there. Arrangements have been made that this group of experts should travel about among our various hospital units to reproduce and preserve for our museum everything of value in our hospital service.

Material accumulated so rapidly that we had to provide a suitable place for storage until such time as it could be transferred to Canada. Through the courtesy of Professor Arthur Keith, the curator of the Royal College of Surgeons' Museum in London, a large room was provided which in peace time had contained part of the valuable Hunterian collection, but which had been transferred to safe quarters because of the danger from air raids. Most of these specimens were preserved in spirit and would therefore be destroyed by fire. In this room is now a large collection forming the Canadian exhibit which is extremely creditable and has attracted much attention from the numerous visitors to the museum. Professor Keith has himself grouped the specimens in a most effective manner and has had them labelled and described each with a suitable inscription.

I would urge that this Academy do its full share of duty in using all its resources to disseminate among the profession the lessons learned from the war both in medicine, in surgery, and the allied sciences. The influence of the experiences of war on our professional work is evidenced by the enormous amount of space devoted to these problems in current medical literature. Our various societies, national or special, when they meet, devote a large portion of their time to war subjects. Our Academy must play its full part in this regard. Already many of our members have returned after extensive experiences at the Front. We hope to have some valuable contributions from them during the ensuing session. Primarily the most pressing problem for solution existed at the Front, but as the sick and wounded gradually sifted through to the base and were finally transferred to their home land, we began to find that the medical and surgical treatment of the returned soldier required and demanded special concentrated study. Eventually, of course, when peace arrives, there will still remain problems in the treatment of our men at home which will demand our best efforts for many years to come. Many mistakes have

been made in the past because of improperly constituted authority in the home field, but the situation is vastly improved. It has been conceded that military and not civil organizations must run our hospitals for the returned soldier. The Canadian Army Medical Service possesses the necessary organization for the purpose. The men who crowd our hospitals in Canada, and who will continue to arrive here in increasing numbers as time goes on, have been trained for years to submit to military discipline. It is essential for their personal welfare that they should continue under military discipline until such time as they are fit to return to their normal vocations of peace time. I fancy no one will venture to gainsay the truth of the assertion that officers and men alike have vastly benefitted by the discipline to which they have been required to submit while serving their country in the army. In some quarters the tendency is, on behalf of well meaning individuals, to relax all discipline and to encourage license. If we attempt to argue this matter out logically we must first agree that these well meaning individuals have, in common with all loyal citizens of our country, the desire to do all in their power to benefit the returned soldier and to demonstrate in some practical manner the debt they owe to men who have sacrificed so much and who have suffered so greatly in the splendid service they have rendered to their country. These men have bravely faced the terrible experiences of the battle-front; the horrors of war, rendered more terrible than ever before through the diabolical methods adopted by a brutal and barbaric foe. Many of our fellow citizens have sacrificed their lives. A very large number have been wounded. There is a large army of men who have lost one or more limbs and in other ways have been maimed for life. We are all at one in our conviction that we cannot do enough for these men when they return home. Our desire is to restore them to their home and family and to secure for them comfort, prosperity, and contentment. Our contention is that the only way to accomplish this is to make them useful citizens. Many of our men have spent long periods of time in hospital. It is a common expression to hear regarding them that they have "got the hospital habit". They become accustomed to having everything done for them, they lose all ambition and have no desire to help themselves. If they are to become useful citizens they must be taught to take a different view point. Every effort must be made to restore ambition, to make them less dependent upon others, and to foster a desire to get back to some useful employment. In so far as we succeed in that regard we not only do the

best possible service to the individual but we also benefit the state. The economic value of efficient treatment is not to be overlooked. The state is saved much in the payment of pensions and gratuities, and the individual's earning power is increased. The methods used to accomplish these results have been gradually evolved; special hospitals for limbless men have been established where they are trained to do work in spite of great disability. We have special institutions for the re-education of men who have suffered various functional losses of brain, nerve or muscle. Individuals suffering from shell shock are placed under the care of specialists who by these remedial measures are accomplishing excellent results. There are many other activities organized for the purpose of restoring these disabled victims of the war to conditions approaching as nearly as possible the normal.

Vocational training has received very careful consideration and is being placed upon a thoroughly systematic basis. The object is to discover, by careful study, the work for which the individual soldier is best fitted. Investigations are carried on at a very early stage in the care of the wounded man and, whenever possible, his vocational training begins while he is still in the hospital ward.

Experiences of the war have given a tremendous impetus to the development of the method of treatment described as Physico-therapy. This utilizes many different forms of physical energy in the cure of the patient. Heat, light, electricity, baths, massage, gymnastics, the *x*-ray, radium, etc., are now employed by experts in each department with skill and judgement. The value of the results obtained in the treatment of the wounded soldier by such means are so apparent that all modern hospitals, civil and military, if they are to maintain their reputation for efficiency will be compelled to make provision for physico-therapy in all its branches and to secure skilled administrators.

In order that these various activities may effect their purpose we must have efficient organization and the means of exacting thorough discipline. Our Canadian Army Medical Service possesses the necessary organization. We are fortunate in having at the head of it in Canada a man who has the ability and the determination to utilize that organization and to direct its policy in a manner which will ensure the maximum of effectiveness in its administration.

This Academy and similar organizations throughout the country have their duty to perform in supporting the multitudinous efforts

which are being made to care for the sick and wounded men who return to Canada. It will be our policy to give our loyal support to the Canadian Army Medical Corps and to aid them in every possible manner in the important and responsible work they are accomplishing in this country. I hope we shall be able to show some special interest in the hospital organizations which are established in our city and neighbourhood. Discussions will be of value in connection with the work done in such clinics as the Military Orthopædic Hospital, the clinic for special cases at the Toronto General Hospital, the neurological clinic, the clinic for chest cases, etc. These all have not only their special bearing in military medicine and surgery, but have also a much wider application, and here as elsewhere the experiences of this war will produce a profound effect upon the theories and practices of our profession.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting about two hundred and fifty dollars, will be made on July 14th, 9, provided that an essay deemed by the Committee of Award be worthy of the prize, shall have been offered.

Essays intended for competition may be upon any subject in Medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the Secretary of the College, Dr. Francis R. Packard, 19 South 22nd Street, Philadelphia, Pa., U.S.A., on or before May 1st, 1919.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay, or a copy of it, shall remain in possession of the College; other essays will be returned upon application within three months after the award.

LIQUID-TIGHT CLOSURE AND THE TREATMENT OF INFECTED WOUNDS

By W. H. Taylor, M.D., C.M.
late Capt. Canadian Army Medical Corps

AND

N. B. Taylor, M.B., M.R.C.S., F.R.C.S.
Captain Canadian Army Medical Corps

IT was over two years ago that work was commenced with a view to provide a liquid-tight closure for septic wounds. Since that time we have experienced many difficulties and disappointments in our attempts to devise a method of irrigation which, by fluid pressure, would enable a wound to be inundated to its remote crevices and yet avoid leakage into the bed. Some forty odd models were tried and rejected before the present form of the appliance was arrived at. Every change in construction of the rubber model required the manufacture of an entirely new steel die from which the former were moulded. A single die, on account of unavoidable difficulties of war-time manufacture, took sometimes several weeks to complete; it was the delay in obtaining these which has handicapped us so greatly in perfecting the apparatus.

Mechanics of the Appliance

The appliance, which is of soft rubber, is virtually a water-trap. Its water-tight principle does not depend upon suction but upon the positive pressure of its contained fluid. No adhesive or other substance is required; its water-tightness is inherent in its construction, the moderate pressure of a bandage alone being necessary to hold it in position against the skin.

Read by N. B. T. before the Shorncliffe Medical Society, August 26th, 1918. Previous papers under this heading published in the *Lancet*, September 22nd, 1917, and May 11th, 1918, also in the *C.A.M.C. Bulletin*, April, 1918.

Figure 1 shows a cross section of the device prior to its application. Figure 2 shows a cross section of the device applied to a wound and held in position by a bandage.

The flange *A* is the chief factor responsible for the maintenance of a water-tight joint between the rubber and the skin. This flange, when the appliance is filled, is kept in contact with the skin by the hydrostatic pressure in the main chamber *MC*.

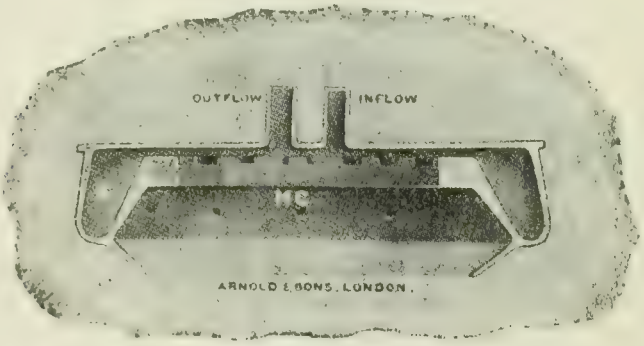

FIG. 1

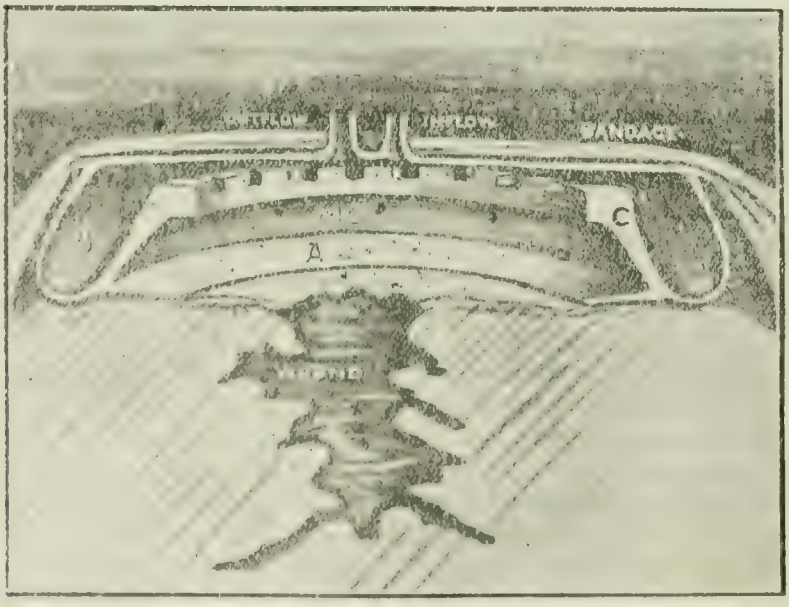

FIG. 2

Fluid passes from the main chamber *MC* to the outer chamber *B* by means of the corrugations on the top and the perforations through the substance of the slanting wall *C*. In this way the pressure on the two sides of *C* is equalized and this wall is thereby prevented from being rotated outwards by the pressure in *MC*. As the chamber *B* fills with fluid, it distends and becomes wedged between the bandage and the skin and is prevented from rising therefrom. Furthermore, the floor of this chamber is attached at its inner part to the wall *C* at the point where the latter gives off the flange *A*, consequently when *B* becomes distended by fluid and is prevented from rising by the restraining bandage, it draws the wall *C* downwards and brings the flange *A* into a horizontal position—that is, parallel to the skin surface.

The pressure of fluid in the main chamber *MC*, acting perpendicularly upon the flange *A* keeps it in intimate contact with the skin. It is evident then, that leakage is impossible so long as the outer chamber *B* is held in contact with the skin by means of the bandage.

By virtue of such a water tight dressing one is enabled alternately to fill and evacuate a deep wound; to fill it even to its remote recesses with irrigating fluid under positive pressure and to empty it again under negative pressure. These alternating pressures set up an ebb and flow current within the cavity of the wound and its ramifications, with the result that, with each cycle, the consistency of the pus becomes rapidly reduced. A greater and greater dilution of pus is effected at each flushing of the wound—a dilution progressing geometrically—until finally the effluent grows clear and the lining granulations clean. We have found that thirty-six hours is the average time required to cleanse a wound of pus. Upon removal of the appliance at the end of this period, clear fluid alone can be expressed from the wound and its sidetracks; not of course that the suppurative processes have been brought to a standstill, but merely that pus is carried away as quickly as it is formed; that the solution is being brought into contact with the granulations lining the walls of the wound cavity and its diverticula, and that those bacteria, not embedded in the tissues, are being rendered inert through dilution.

The Application and Use of the Apparatus

The apparatus is applied to the part, with its centre corresponding roughly with the deepest part of the wound, and bandaged in position. The bandage should be snug and evenly applied but

not tight. The long diameter of the appliance should be placed in the long axis of the part with its curve coinciding with the contour of the skin.

The following auxiliary apparatus will be required to install the irrigation:

A reservoir capable of containing two to three pints of fluid —an ordinary douche can will serve.

A waste pail.

A pair of glass unions.

Two three-foot lengths of rubber tubing, each fitted with a pinch cock.

The reservoir is connected, by means of one length of tubing, and a glass union, to the smaller tube issuing from the cover of the appliance; the larger tube issuing from the cover is similarly connected to the second length of tubing, which is led into the waste pail (Fig. 3).

We depend upon fluid pressure to conduct the irrigating solution into the interior of the wound. No drainage tubes are used; our experience has been that these obstruct the outflow of pus as often as they drain. Even provided that the main cavity of a wound is efficiently drained thereby, side pockets are frequently blocked by the wall of a rubber tube and thorough cleansing of the granulating surfaces with which it comes into contact, prevented. We have on many occasions seen a tube, or several small ones placed close together, acting as a very efficient cork and preventing drainage from the surface opening itself. The insertion of a tube is usually haphazard, and unavoidably so; one is unable to learn the relative position of its deeper portions. It may be tucked away in a secondary pocket, it may be kinked or pressed against the bottom or side wall of the primary cavity, which may represent no more than the lobby in the general architecture of the wound. In such cases the area tributary to it must be limited. Later, it may become plugged with thickened pus or a fragment of necrotic tissue, in which event its usefulness as a drain is at an end.

In some cases of old sinuses with small outlets, showing a tendency to valve, we use a small wire cage to keep the mouth of the wound patent (Fig. 4). It is usually better, however, to enlarge the opening by incision and to use nothing whatever in the wound. No attempt should be made to drain a deep pocket through a very small surface opening; though the large and often mutilating incisions, one sometimes sees, are by no means necessary, a moderate sized outlet should be provided for the pus, especially if this be viscid and mixed with gross necrotic tissue.

FIG. 3

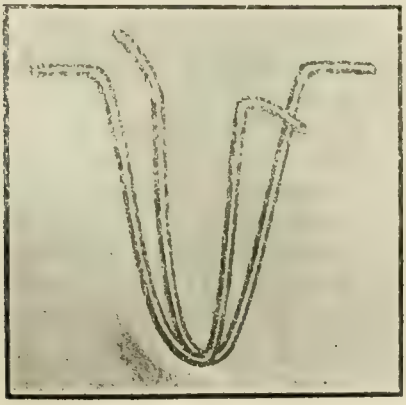

FIG. 4

Regulation of the Irrigation

The essential feature of this form of irrigation, as already stated, is the establishment of an ebb and flow current by means of alternating pressures. In gauging the amount of pressure, either positive or negative, to be used in a given case, the comfort of the patient should be our guide. If pain be caused we may be sure that the amount used is excessive. Positive pressure rarely is at fault, but negative pressure frequently requires reduction on this account.

Positive Pressure.—This is established by opening the inflow tube and clipping off the outflow; and is maintained so long as these are left so. The lengths of the periods—which of course interchange with those of negative pressure—are relative to the quantity of discharge present, being shorter when the pus is abundant and longer when it is scanty. In an average wound plus pressure is maintained for one hour periods during the day, and for two or three hours during the night. During the day the patient is able, usually, to regulate the irrigation himself. During sleeping hours, as a matter of convenience, the pressure may be reduced, both tubes clipped off and the appliance not interfered with until morning, except, perhaps, to freshen the fluid in the wound. In this way the appliance acts merely as a continuous bath.

The amount of positive pressure used is from twelve to eighteen inches; *i.e.* the level of the fluid in the reservoir should be as far as that above the level of the wound. In cases of empyema positive pressure should be not more than six inches, and its periods should be of brief duration.

The question has been asked, "How do you know that the fluid, during positive pressure, *does* actually find its way into the remote recesses of a wound?"

In answering, let us first look at the principles of physics involved. A fluid in flow seeks its level, and once having become static, its pressure is equally distributed in all directions. It follows then that when the level of the fluid in the supplying reservoir is, let us say, 18 inches above the level of the wound, with free ingress of the fluid provided for by opening the inflow and escape prevented by closure of the outflow tube, the surface of the wound is supporting an eighteen-inch column of fluid. As we have a continuous system of channels extending from the supplying

reservoir to the termination of the most distant recess of the wound cavity, the fluid will continue to flow until the wound and all its offshoots are inundated, when the flow will cease and the pressure become equalized throughout all parts of the system. It seems evident that any part of a wound permeable to fluid would be reached by the irrigating solution. In other words, any pocket from which pus can be discharged can, *ipso facto*, be penetrated by this form of irrigation.

This may be readily shown clinically. After thirty-six hours, as already stated, no pus can be expressed from a deep wound. Pressure along tracks which previously had discharged quantities of pus, brings forth, at the end of this time, clear or only slightly turbid solution. Again, in several cases of through and through wounds, the two openings had persisted but the intervening tunnel had apparently closed; no evidence of an inter-communication could be obtained by probing or syringing, or in some cases by the injection of a bismuth mixture followed by a radiograph. In all such cases when the device was applied to one of the openings, clear fluid would after a time—though not, perhaps, for twelve to twenty-four hours—issue from the other.

Even more graphic evidence is afforded by the *x*-rays. Here is a series of pictures taken of a gun-shot wound of the thigh, with fracture. Two of these were taken prior to the application of the apparatus, whilst two were taken after a 25 per cent. solution of potassium iodide had been used as the irrigating solution. This solution casts a shadow whereby the extent of penetration of the fluid can be readily demonstrated. In these pictures the path of the fluid may be traced down to and along the shaft of the femur. The irrigation in this instance was commenced two hours in advance of the taking of the radiograph, positive pressure having been maintained for the entire period. The wound's mouth was less than one inch in diameter, and a probe passed inwards for a depth of one and one-quarter inches.

Let it not be supposed that there is anything violent about this fluid pressure. It is rather in the nature of a gentle but very insistent seepage which occurs—the fluid probably taking several hours to permeate all depths of a wound. In upward of one hundred and twenty cases, treated at Granville, Orpington, and elsewhere, no ill effects have at any time occurred. The idea of the pus being placed under pressure and forced ahead of the irrigating fluid along paths which, ordinarily, it has no ten-

dency to follow, is not correct. It is to be remembered, in this connection, that the mass effect of the fluid during positive pressure is quite distinct from any action resulting from the movements of its integral particles. Thin pus and the irrigating fluid are freely miscible, and diffusion and convection currents, regardless of hydrostatic pressure, allow, or rather provide for, a ready movement of discharges toward the outlet of the wound and so into the cavity of the appliance. Furthermore the low density of the pus as compared with that of the irrigating fluid (5 to 10 per cent. saline) enables the former, even though this be thick, to make its way upward and be replaced by the heavier solution. These forces, whose effects are augmented by the reversal of current consequent upon the establishment of negative pressure, induce an intimate intermingling of pus and the irrigating fluid until the contents of the wound and the appliance reach a more or less uniform consistency. The appliances themselves are capable each of accommodating from 8 to 20 ounces of fluid, according to the size. As it is an exceptionally dirty wound which contains more than four drachms of pus at any given time, the discharge will be diluted anywhere from sixteen to forty times or more at each filling of the apparatus. At the end of the seventh cycle there will be a dilution of one in several millions. In any event it would be feasible to use very small amounts of positive pressure until the contained fluid became clear.

If the validity of these data be accepted, it must be agreed that by such a dilution of pus, with its content of ferments and bacteria, the spread of infection would be impeded rather than encouraged. This conclusion is amply confirmed clinically; a wound cavity becomes shallow and contracts rapidly under treatment, even though positive pressure be used for the greater part of the time.

Negative Pressure. This is established by closing the inflow and opening the outflow tube. The exhaustion of air, consequent upon emptying the appliance, produces a parital vacuum whose degree is directly proportionate to the length of the pendant column of fluid in the outflow tube.

Negative pressure acts very powerfully upon a wound, and in acute cases will cause pain if much be used. Pain even in slight degree should be avoided, and the negative pressure reduced or abolished if discomfort should be caused thereby. Chronic cases can usually stand the full quantum of suction, that is, the pressure represented by the height of the ordinary military bed above the floor level.

In order to measure and accurately regulate the amount of negative pressure, we use a small glass tube which gives off laterally a long curved limb (Fig. 5). Either end of the straight portion of the glass is connected to a section of the outflow tube; the extremity of the curved limb is free and is closed save for a minute pin-hole opening. By dividing the outflow tube at the

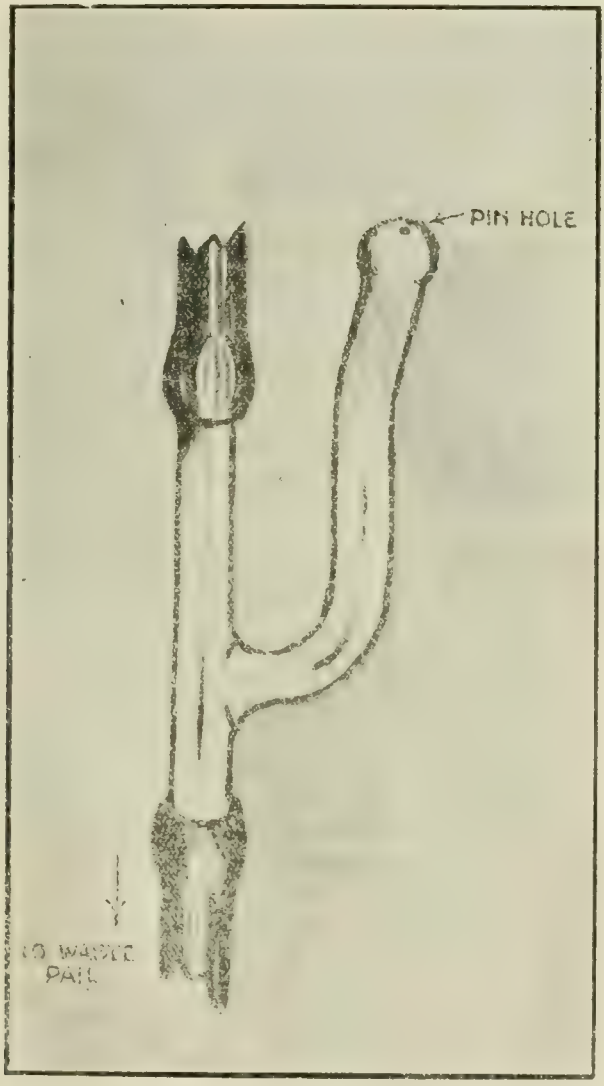

Fig. 5

desired level, this glass connection can be introduced into any part of the former's course between the wound and the floor; air is, in this way, admitted to any level of the outflow tube through the pin-hole at the extremity of the curved glass limb. The pendant column of fluid is broken at the point of entrance of air with the result that its length is reduced and the negative pressure accordingly diminished.

The periods of negative pressure are rarely of longer duration than fifteen or twenty minutes, except in cases of empyema, when it is maintained for the greater part of the time.

Rationale

Our belief in the superiority of mechanical cleansing to all other methods of sterilizing a wound has been the incentive urging us to devise some means of irrigation by liquid-tight closure.

Granting that an antiseptic, in the strength used, has power to sterilize or to reduce the infectivity of pus in the main cavity of a wound, there are yet many deep pockets, where microbes lurk and multiply, that are inaccessible to the solution as ordinarily employed, and the combined area of these pockets may be many times greater than that of the main cavity. Furthermore, the buried strata of the granulations, and the tissues beyond, are uninfluenced by such a solution. Here, as is well known from the experience of the "flare up" which so frequently follows an operation in the region of a recently healed wound, virulent organisms lie hidden. The experiments of Colonel C. J. Bond indicate that the rôle of the phagocyte is not always beneficent; it is also a factor in the spread of infection. After the ingestion of bacteria these wandering cells in many instances carry the latter into the deeper structures—fibrous tissue, muscle and bone—by a return immigration. Here they discharge their load, which is taken up by the fixed tissue cells. In this manner a secondary infective zone is created for a varying radius about the wound.

As antiseptics, apparently, are not selectively lethal to micro-organisms, it would appear that these, even though they penetrate to a sufficient depth, must destroy the tissue cells ere they can attack the harboured microbes. On the other hand our clinical experience has more than justified the hope we entertained that these harboured microbes might be reached by mechanical means. Variation in pressure of the irrigating fluid,—associated as it is by

gentle "milking," not only of the wound spaces, but of the tissue spaces as well, and accompanied as the latter presumably is by an outward flow of lymph loaded with microbes,—exerts its influence farther afield than the virtue inherent in any chemical substance could be expected to do.

The so-called antiseptic treatment of infected wounds is, in reality a combination of, or a compromise between, an ant septic and a mechanical method. Even one most favourably disposed toward the treatment of wounds by antiseptic medication would not dream of dispensing with the mechanical factor. He would not think, for instance, of injecting an antiseptic into an unopened abscess with intent to sterilize it, nor hope to heal a wound in the presence of a foreign body—yet, if truly efficient, we should expect an antiseptic to do these things. Rather, he would provide free and dependent drainage; he would remove the foreign body; he would flush out with his antiseptic solution, removing as much pus as possible by the force of the stream; finally he would apply moist dressings to aid the removal of pus by capillary attraction. He would employ every means in his power to encourage the *removal* of discharge; did he not, the use of any antiseptic would be fatuous. Gross cleansing agencies in the treatment of the wound cannot, with impunity, be neglected; yet perhaps antiseptics may be dispensed with when full recognition is given to mechanical methods of cleansing.

The rationale of liquid-tight closure is but following this indispensable value of mechanical cleansing to its logical conclusion. "Where there is pus *let* it out" has been the dictum of ages; ebb and flow irrigation goes a step farther and insists "Where there is pus, *wash* it out and *keep* it washed out".

Though this method is primarily a means of exploiting the mechanical factors to the utmost, any solution, antiseptic or otherwise, may be used. Personally, we prefer 5 to 10 per cent. saline, and use this almost exclusively. Hypertonic saline, in that it produces a flow of lymph, does not waterlog the tissues and is incapable of combining with organic material, seems most suited to our purpose. It is also cheap and readily procured—facts not unimportant in view of the large quantities of fluid used in this method. Another consideration which has inclined us to prefer saline to an unstable antiseptic solution such as Dakin's, is the use of heat as a curative agent. The necessity of using the latter solution cold is not a disability when the amount of fluid used is unavoidably so small that it is not possible, in any case, to have it reach the

wound at the optimum degree of temperature. With liquid-tight closure, on the other hand, the volume of fluid employed may be sufficient to maintain the temperature, and to make possible the exhibition of an appreciable degree of heat within the wound.

Results

In order to combat wound infections successfully and with dispatch, the desiderata, in our eyes, appear to be: thoroughly to remove pus, the pabulum upon which organisms flourish; to render bacteria innocuous through dilution; to cleanse of microbes and effete leucocytes the subjacent layers of the lining granulations, as well as the deeper structures outlying the actual walls of the wound cavity, by the promotion of an outward flow of lymph; and last, to stimulate the local blood flow.

How are these requirements satisfied by the liquid-tight closure method?

The question of the removal of pus and bacteria from the wound cavity and its ramifications has been already dealt with; that this basic factor is fulfilled we are convinced. We will pass on to consider the question relating to the production of a lymph flow. That suction, even in moderate amount, is capable, when applied to a raw area, of promoting an outward flow of lymph is well known. Our results show that the negative pressure induced by this appliance has a marked lymphagogue action.

Should the apparatus be removed some little time after the treatment has been instituted, when the wound is fairly clear of pus, a large quantity of clear lymph will be found within the cavity of the appliance and upon the surface of the wound. Similarly, the fluid in the waste pail, though practically clear, shows, when treated with nitric acid, a large proportion of albumen. A proportion of this lymph flow must of course be ascribed to the osmotic power of the saline itself, yet its volume is much greater than this will account for, and exceeds that which saline used in the ordinary way will promote. Furthermore, when negative pressure is not employed, we do not see anything approaching the same degree of lymphorrhœa.

In this subject of lymph flow is bound up the question of sterilizing the underlying tissues. The suggestion that the lymph carries with it a burden of bacteria and dead phagocytes seems plausible. It may also retard return immigration. Though no

incontrovertible data has yet been obtained, such as might be afforded by cultures, or the microscopical examination of sections from the deeper tissues before and after treatment, to prove that this form of irrigation is capable of effecting a thorough cleansing of the outlying structures, there is, nevertheless, a great deal of *prima facie* evidence indicating that such is the case. For instance, during the first few hours of the treatment, the pus, as indicated by the contents of the waste pail, is greatly increased. In some cases the discharge is augmented to a remarkable degree. A very small fraction of this increment can be accounted for by the more efficient drainage; after the first clearance of pus from a wound, drainage, no matter how efficient, would account for no increase in the discharge issuing from its mouth. As an ordinary wound contains, at any time, no more than a few drachms of pus, which would be scarcely noticed in a pint or two of irrigating fluid, there is a large residuum unaccounted for. An actually increased exudation from the walls of the wound seems to explain most reasonably this discrepancy. That this addition of pus in the early stages is due to a recrudescence of the infection is disproved by the general and local improvement in the case; reduction of swelling, induration and tenderness go hand in hand with the increased pus production.

An increased bacterial count is also a feature of the early stages of the treatment. Cases showing a count of one or two organisms per field before the treatment was instituted, gave after the lapse of twelve hours or so, a count of over one hundred per field; in fact, sometimes the organisms were too numerous to count. From this the bacteriological curve would drop, sometimes rapidly sometimes slowly, to its previous level, then below and finally to one or nothing in ten fields. This elevation of the count was always higher in old-standing cases with widespread induration; recent cases frequently showed little or no increase. Fig. 6 reproduces a typical curve, in a case of eight months standing. The abrupt initial rise was a source of some apprehension to us for a time until it was learnt that, in spite of the high counts, the wounds were progressing more favourably than ever before; we soon came to look upon them, not as evidences of stimulated microbial growth, but rather as signs of increased excretion. The more pronounced rise in the curve of old-standing, as compared with the recent cases, we construed as an indication that in the former the infection, during previous treatment, had had time and opportunity to travel farther afield and that the bacteria had entrenched themselves within the tissue depths whence ordinary means of drainage had failed to dislodge

them. This interpretation is borne out by the slower and more gradual decline of the curve in such cases, especially in instances where the infection has extended into bone.

Other facts which favour the view that the cleansing process extends well into the surrounding tissues are:

1. Wounds once healed have never subsequently "flared up".

2. The tissues for some distance surrounding the wound quickly become soft and pliable and lose their tenderness and swelling.

3. In several cases of skin-grafting by Thiersche's method, the grafts have "taken" everywhere without a sign of pus, though the cases, in the majority of instances, were, prior to treatment, very purulent and of long standing.

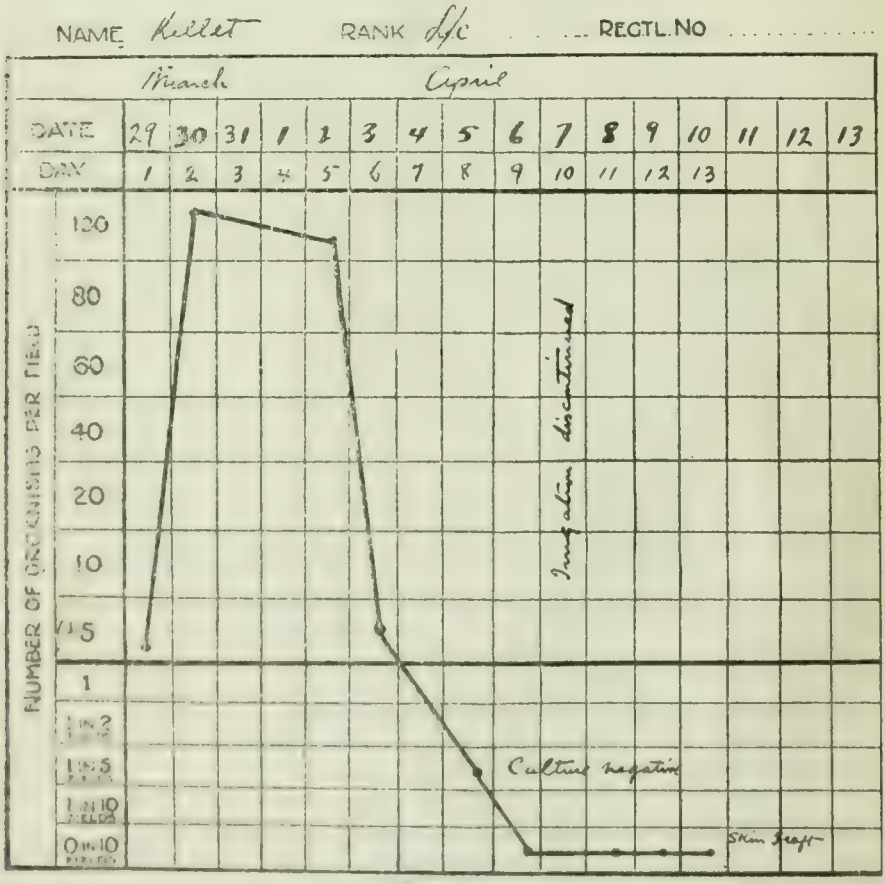

FIG. 6

The final question, whether or not the local blood supply is amplified, may be briefly dealt with. The appliance during the periods of negative pressure acts as a "cup". Its hyperæmic effect is usually quite evident; in fact, in acute cases this is sometimes too pronounced in which event the negative pressure will require reduction or abolition. Pain, however, as elsewhere mentioned, is our signal for reduction; hyperæmia devoid of pain is advantageous only.

In the cases treated up to date, though sometimes this and sometimes that feature would be enhanced, the results have shown a general uniformity. It is impossible in such a paper to give a detailed account of even a few of these. The following case, which is typical of the series, is given, not in any attempt to substantiate our arguments by a single instance—this would fail in logic—but solely with the view of illustrating by concrete example the characteristics of this method of treatment which have been set forth in the foregoing discussion.

Private C., wound on the posterior aspect of the knee joint, received October 24th, 1917, eight months prior to treatment. The wound is two and one-half by one and one-half inches and two and one-half inches deep. There is abundant discharge; pus is burrowing for a distance of an inch or two beneath the subcutaneous tissues. There is marked induration and tenderness for a radius of several inches surrounding the wound. There has been little or no improvement in the last two or three months.

Bacterial count, three to four per field.

Treatment commenced June 30th, 1918, and continued for six days. There was reduction of induration and tenderness in a few hours. Next day the bacterial count was over one hundred per field. The wound cavity, upon removal of the appliance, was found to be filled with clear irrigating fluid mixed with lymph; no pus can be expressed. The pus in the waste pail is very abundant, after standing for the twenty-four hours.

The appliance was removed at the end of the sixth day and not reapplied. The surface of wound is quite clean and covered with bright red granulations. Bacterial count, nothing in ten fields. Upon examining the wound after twelve hours of moist dressings, it was found to be filled with clear straw-coloured lymph; upon expressing this, blood alone appears. Wound healed July 27th—less than one month after treatment was commenced.

In the entire series of one hundred and twenty cases the average time which the wounds discharged previous to treatment was

about six and one-half months—196 days. The average duration of treatment was seven and one-half days. Many of the cases contained dead bone, so healing was not aimed at, but merely preparation for operation. Even in these cases the change in the condition of the wound was remarkable, surrounding inflammation subsided rapidly, and the discharge after irrigation had been discontinued was but a slight or moderate staining of the dressings. In these bone cases splendid results are obtained by a course of treatment prior and subsequent to the removal of the sequestrum —the after-treatment preventing re-infection.

Conclusion

The subject of wound infections is a most fascinating one. There are not many of greater importance in war surgery, and there are few directions in which advance seems to promise larger benefits. It is probably true, as is sometimes remarked, that any wound, provided it contains no dead bone or foreign body, will close in time; but every day of discharge is a detriment and its effects in many cases are added to the final disability. The relative value of any method for the treatment of infected wounds must be measured by the rapidity with which it cleanses them.

What a miserable train follows prolonged infection—ankylosis or restricted movement of joints, destruction and sclerosis of muscle, necrosis and non-union of bone, to say nothing of lowered *morale*. Nor is the amount of the discharge always a true index of the damage which is being done; the secondary infective zone also requires attention. In a sense there may be such a thing as "laudable pus", we have all noticed that in cases with copious discharge the indurated, swollen and tender area is not so extensive; whereas in cases showing scanty discharge there may be widespread inflammatory signs. These phenomena, whose precise pathology is at present obscure, are probably akin to the cessation of urethral discharge which synchronizes with an acute gonorrhœal epididymitis. In like manner, the increased discharge which marks the first few hours of the irrigation, and the rapid subsidence of inflammatory signs in the tissues lying more or less remote from the wound cavity proper, appear to bear a reciprocal relation to one another. Herein may be sought the explanation of the end-results obtained by this method. This initial "catharsis" of the tissues,— marked increase in the bacterial count with forced discharge of

purulent material going hand in hand with lymphorrhœa; synchronizing, as it does, with subsidence of induration, tenderness and swelling, and followed shortly by a negative bacterial count and rapid decline in the amount of pus excreted,—we regard as truly significant.

In dealing with the question of infected wounds, final results are always exposed to the criticism of being no more than the outcome of natural, and perhaps unaided, tendencies toward repair, rather than of being the attainment of any particular procedure or method of treatment which may be advocated, and adopted at the time. We fully recognize the importance of searching with unbiased mind for the true significance of such results, and are sensible of the scrutiny to which conclusions, based to a large extent upon clinical observation, must be subjected; nevertheless, the results obtained by the method of irrigation, set forth in this paper, are of so outstanding and decided a nature, and the individual features consummating the final result so consistent and clearly-cut, as to invalidate any conclusion which does not attribute such findings to the mechanical methods of cleansing employed.

There are many questions to be worked out in connection with this form of irrigation, and with regard to infection generally. I hope, that at some, time opportunities to solve them will be given to us and others.

Surgeons of the French army have been carried in æroplanes to stations behind the firing line when their services were urgently needed. Four surgical æroplanes were completed for this use on the battlefields. The planes were capable of lifting three men—a pilot, surgeon and an *x*-ray operator—together with radiograph, surgical instruments and a small folding table in aluminum. They had a speed of from forty-five to seventy miles an hour, which enabled them to reach, for example, Noyan to Paris in an hour, whereas the lightest surgical motor took half a day.

THE PENSIONABILITY OF THE DISABLED SOLDIER

Lieutenant-Colonel J. L. Biggar, C.A.M.C.

NO apology is needed for a further discussion of the problem of the disabled soldier. Of all the questions that will have to be decided by the people of this country within a few years none presents any greater difficulty, or is likely to entail more errors of judgement, than the duty owed to those citizens who served the State by a personal participation in the battles for its freedom, and suffered a physical detriment thereby.

Several articles have appeared within the last few months bearing upon the various phases of the work of the medical profession in connection with these men. From these articles one gathers that the duties and responsibilities of the Board of Pension Commissioners are not generally understood. Indeed it is fairly obvious that sentiments natural to the most humanitarian of all professions have influenced judgement more than is fitting to the unemotional scientific mind. Medical men will realize that the opinion of the whole of Canada will be greatly influenced by their attitude towards this problem. It therefore deserves their consideration from every angle, especially with a clear realization of their duty to the State, as well as to the individual soldier or sailor in whom they may be interested in a professional capacity.

The Board of Pension Commissioners is a body appointed by the Parliament of Canada to administer regulations regarding pensions; to determine the pensionability of a discharged soldier or sailor or his dependents; to award him pension; to pay the money to which he or they are by such award entitled; and to increase, decrease or discontinue a pension, previously awarded, as may be indicated. Whatever opinion anyone may have, regarding the pensionability of a discharged man or his dependents, the whole responsibility for action lies with the Board, and its decision is final.

The Board stands in the position of a trustee for the member of the forces and is at the same time the servant of the State. Its function is judicial. Its verdicts are the outcome of an unbiassed

consideration of the facts in each case. Its limitations are those imposed by the citizens of the country, through their Parliamentary representatives, and contained in the pensions regulations; these it has no power to alter or modify.

A pension is awarded for total or partial disability– a word commonly used and not commonly understood. A man is not pensioned because he has lost his eyes, but because, having lost his eyes, he cannot see. He is not pensioned for a wounded shoulder, but because he had lost his full ability to use his arm. In other words he is pensioned for the loss, partial or complete, of a normal ability; which, in fine, is the exact meaning of the word disability.

A disability thus defined reduces a man's capacity for ordinary employment. This capacity may be reduced (1) because by reason of his loss of a normal ability his choice of occupation is restricted; (2) because he is, by reason of his disease, prohibited from undertaking certain forms of work; (3) because he, by reason of his disease or injury, requires more rest than the normal man.

As examples one might suggest that the man who has lost his sight is restricted in occupation because he cannot undertake watchmaking, or other work requiring vision. The man suffering from pulmonary tuberculosis, even apparently cured, is prohibited from occupations involving his remaining long hours in a bad atmosphere. The man with a poorly compensated valvular lesion of the heart is handicapped by the need of finding such an employment as does not necessitate physical exertion of any kind.

It is obvious that the first duty of the Board of Pensïon Commissioners lies in determining the extent to which any given disability handicaps its possessor in regard to his capacity for ordinary work, or, in another phrase, his employability in the general labour market—It has then to elaborate a scale of such handicaps, beginning with those that render their possessors unemployable,—generally but improperly known as "Total Disabilities", and placing each lesser handicap in its proper relation to these.

A "total" or any lesser disability may be derived from different causal diseases or injuries; that the causes of a given disability may be many and various is in a measure immaterial from the pensioning standpoint. The problem before the Board never varies; it consists in the determination of the extent to which the ex-soldier or sailor is, by reason of the physical detriment resulting from his service, handicapped in his capacity for ordinary work.

The main difficulty in the determination of pensionability lies in the realization of what constitutes normal employability

in the general labour market, or normal capacity for ordinary work. This does not mean capacity for manual labour only, but for the whole round of employments open to the normal healthy unskilled individual.

The pensions regulations specifically provide that pensionability shall be determined without any reference to the applicant's previous occupation. The fact that he cannot return to his former employment, at which perhaps he earned a large wage, does not entitle him to any larger pension than is awarded to his fellows labouring under the handicap of a similar physical detriment.

The regulations also provide that the amount of money payable for a condition of "Total Disability" shall be $600.00 per annum, with extra allowances for wife and children. This is the sum fixed by parliament as that necessary to keep a man, unable to provide for himself, in "decent comfort." The Board of Pension Commissioners has no power to alter this "Total Disability" award. It is instructed, however, to determine what proportion of this "total" shall be awarded for lesser disabilities.

The determination of what detriments constitute a total disability and of the correct relation borne by lesser disabilities to this "total" has involved much labour. The literature on this question in our own and other languages is extensive, and has had to be most carefully and thoroughly sifted; the application to Canada of the fractions currently employed in other countries has not resulted by any neans invariably satisfactorily; a very considerable amount of careful study has been found necessary to establish fractions equitable for this country.

The results of the investigation of this problem by the Board of Pension Commissioners are embodied in the table of disabilities issued by the Board to its examining medical officers throughout the country. Necessarily the figures contained therein are subject to change as knowledge increases; but they are, however, the most accurate and equitable obtainable for Canada to-day.

The table is the outcome of a very considerable amount of investigation into a special branch of medicine. Application to an individual case is a form of specialized professional work.

Two facts bearing upon this statement deserve complete realization: (1) The physician devoting his attention to the treatment of the disease cannot afford the time necessary to the accurate determination of its result in the individual affected in regard to his employability or capacity for work in the general labour market; (2) the disability table cannot be so elaborated as to

lay down the specific percentage for each variation of disability resulting from every disease and injury. The experience gained by the medical staff of the Board of Pension Commissioners by the consideration of thousands of cases puts them in the best possible position to arrive at a just conclusion in any individual case.

Suggestions are not infrequently made that the Board of Medical Officers which examines the soldier or sailor on discharge is more competent to determine the extent of his pensionability than the medical advisor to the Board of Pension Commissioners can possibly be. In effect the statement is, "We see the man and can determine from our examination of his body what sum of money he should receive from the State. You only see our description of him and are therefore obviously much less able to decide this question."

This statement is most plausible; and most erroneous. In the first place the disease or injury which is the matter of primary importance to the Board of Medical Officers and with the diagnosis treatment, and description of which they are essentially occupied, does not automatically determine pensionability. One does not need to label the point that in most diseases the incapacity for work may and does vary from zero to 100 per cent. This fact is recognized in the table of disabilities in which such statements as "according to incapacity" or "up to 100 per cent." are to be found opposite many conditions. In the second place, a board in Halifax, estimating the incapacity of a man suffering from, let us say, asthma of a certain degree of severity, puts his pensionability at 75 per cent. Another board at Vancouver estimating an exactly similar case puts the pensionability at 25 per cent. Each board might be consistent in its own awards but utterly inconsistent with the awards of other boards.

It is obvious therefore that a clearing house is necessary. If consistency is admirable in an individual, it is essential in a department of the government: the law must be the same from the Atlantic to the Pacific. This consistency is the ideal towards which the Board of Pension Commissioners strives. Doubtful cases are thoroughly discussed: new cases are debated that new precedents may be established: the elasticity of the figures given in the table (viz:—"from 10 to 50 per cent.—up to 40 per cent.") is used by members of the staff, working day after day on cases of the same sort, to deal justly with each applicant; in short every effort is made to arrive at a complete realization of the disability in each case and to award exactly that pension which it justifies.

Another feature of the work of the Pension Board deserves particular mention in this connection. It is essential that the justification for the expenditure of public money should in each case be clearly stated and carefully recorded. The documentary evidence by which this justification is arrived at and the essential reason for the expenditure it warrants form a part of the official records of the government. These must be available for Parliamentary consideration at any time. They must also be available for reconsideration by the Board in cases of appeal against its original decision, for adjustments of pension in cases in which the disabling condition has lessened or increased since the original award, and for the determination of the pensionability of dependents in cases in which the pensioner has died. It would be extremely difficult, if not impossible, to provide records fulfilling these requirements if awards of pension were made by numerous boards scattered across the Dominion.

To judge correctly, it is obvious that all the facts regarding a disabling condition must be presented. The best report is that which describes carefully and thoroughly the anatomical condition of the affected organ or member and gives in a comprehensible form its measure of functional capability. When this is done the matter of the determination of the proper award is comparatively simple. The difficulties of a correct determination arise from the fact that doctors, both military and civilian, find it hard to appreciate the purpose for which their reports are used. A recital of facts sufficient to justify discharge from the Army is not sufficient for pensioning purposes. What is required is a perfect case-history, and the writing of these is not a sample nor a universal accomplishment. The record should be a statement of the physical condition of the man examined, in which each symptom mentioned is accounted for by its necessary objective signs, each anatomical defect is described with its concomitant symptoms, and no loose statement, obviously incorrect on the face of it, is allowed to appear. The civilian practitioner labours under an additional handicap in that his natural sympathy for the disabled soldier or sailor undoubtedly tends to affect his estimate of the severity of the disabling condition.

Occasionally cases have occurred where the desire to assist the patient financially has obviously been the predominant motive in the writing of a report or certificate. In one case this was so glaring that steps were successfully taken to have the offending physician struck off the rolls of his provincial council and thereby

deprived of his license to practise his profession. In any event this sacrifice of professional integrity upon the altar of a mistaken humanitarianism is easily discovered by a comparison of the incorrect description with those of earlier dates on file; it tends therefore, to prejudice rather than to help the applicant's case, and merely adds to the labour of the medical advisor's staff.

Undoubtedly the realization of the importance and the purpose of these records must inevitably tend towards perfection in their composition. The fact that inaccuracies or omissions injure either the doctor or his disabled fellow-citizen should invariably be borne in mind.

To summarize, there are three powerful arguments in favour of the centralization of the business of awarding disability pensions.

1. It is a specialized branch of medical work requiring for its proper performance special training, as do other specialties.

2. It is essential that the pensions awarded shall be, so far as is humanly possible, equal for equal disabilities.

3. It is imperative that the statement of the facts justifying the award shall be clearly and comprehensibly made, carefully preserved, and available in the case of future enquiry or appeal.

"Bip" is one of the few words that will be added to the dictionary as the direct outcome of the war. "Bip" is a combination of bismuth, iodoform, and paraffin paste, and is the name given to one of the most important surgical discoveries of Dr. Rutherford Morrison, the famous operative surgeon. By the new process the destroyed tissues and infected areas are excised, the parts thoroughly drenched with pure spirit and after the application of a thin layer of "bip" the wound can, in many cases, be sewn up immediately with every prospect of primary union and no further distress to the patient. Even wounds associated with bone injuries or damaged joints have been successfully treated by this method, and compound fractures have lost much of their seriousness. A London military hospital records a marvellous case of a piece of shell which penetrated a soldier's chest and diaphragm, passing into the abdominal cavity. These terrible injuries were inflicted without subsequent ill consequences, the track of the missile being excised and the wound sutured after a thorough application of "bip". Similar success has been attained in cases of gas gangrene since the germs of this infection can no longer thrive.

MEDICAL SERVICES OF THE DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT

By Lieutenant-Colonel F. McKelvey Bell

Director of Medical Services, Department of Soldiers' Civil Re-Establishment

THE care of the invalided soldier is divided roughly into two stages:

1. Before discharge, by the Department of Militia and Defence, and

2. After discharge, by the Department of Soldiers' Civil Re-Establishment.

It is apparent to the casual observer as well as to the physician that in a large proportion of cases the soldier returning from the front presents a temporary condition of altered mentality which, as compared with the average civilian, may be looked upon as abnormal.

It is not to be wondered at that after months or years of intensive physical and military training, and after months or years of untold hardship and mental strain, the soldiers who have fought so heroically in this super-war should present neurological or psychopathic conditions which in former wars were almost unknown.

It is estimated that it takes approximately one year to train a civilian to become an efficient soldier, that is, to teach him discipline, to teach him to submerge his own individuality and desire for personal initiative and to fight with the other members of his unit in such a way that the unit will act as a homogeneous whole. It is not surprising that the soldier, for whom everything is provided by the State, should lose, to a certain extent, his sense of personal responsibility. In order that the machine may be effective, the various parts of that machine must lose their identity. For the good of the Army it is necessary that the soldier should

Read before the Alberta Medical Association

have no worries and that his every effort should be devoted towards the one purpose, viz.: efficiency in fighting.

If, then, it takes a year to convert a civilian into a soldier, in thousands of cases it takes as long to re-establish him as a civilian.

The returned soldier is, as a rule, nervous and restless. He has been accustomed to rapid changes of life and environment. His duties were associated with a constant panorama of moving scenes and endless excitement, and he has been subjected to the merciless effects of intense bombardment and to the continuous shocks which are incident to the battle-front. It cannot be expected that he will settle down to the humdrum existence of civil life or that his initiative may be invariably relied upon without judicious encouragement. Continuity of effort is essential to success and a restless state of mind precludes steadfastness to continuous and uneventful labour.

For the purpose of assisting the returned soldier to again take up the duties of citizenship, the Government of Canada has authorized and established the Department of Soldiers' Civil Re-Establishment, whose duty it is to assist in every way the return of the ex-soldier to normal and successful civil life. It is no reflection on the brave boys, who have given of their best, that they need help and encouragement in their return to a life from which they have been long estranged and under such exceptionally trying conditions. All honour to them that they have succeeded in the new work which they undertook and have carried out so successfully in the defence of their country. The problem of the civil re-establishment of the disabled ex-soldier and ex-sailor is one, however, which needs to be approached without sentimentality but with an understanding sympathy. The physician, the surgeon, the educationalist, the business man, the manufacturer, and every worker whose services are employed in this most important undertaking, need to approach the subject with a deep sense of their responsibility to the individual and to the State.

The medical problems involved are complicated and present a kaleidoscopic variety: the neuropath, the limbless, the blind, the tubercular, the epileptic, the various new conditions incident to the present war, and the chronic cases. As soon as the returned soldier who is crippled or rendered partially disabled by disease or injury can be made to realize that life still holds interests for him in the manufacturing, the educational, or the commercial world, and that there is a department which is ready to do every-

thing necessary to help him overcome his handicap, so soon will a step forward have been made in connection with his rehabilitation and his return to useful civilian life. The knowledge that he can still be self-supporting in spite of the handicap of the loss of limbs or of other serious defects, assists him to regain pride in his own personal effort and encourages him to make a strong endeavour to become self-supporting.

The special duty of the vocational branch of the Invalided Soldiers' Commission is to teach new occupations to men who, through disability or disease contracted on war service, are unable to return to their former employment. At the present time, about three thousand ex-soldiers and sailors, from the Atlantic to the Pacific, are attending classes and learning new occupations under the care of the vocational branch. Over two hundred varieties of trades and occupations are being taught throughout the Dominion and the men have shown that they are anxious and willing to learn, and make themselves independent once more.

At the end of August approximately fifteen hundred disabled men had graduated from the courses given by the Department and had found employment. It is interesting to know that recent figures show that on the average these men are receiving about 25 per cent. more in earnings than before the war and this notwithstanding their war disabilities. This is in addition to any pension which they may be receiving.

The knowledge that their pensions will not be reduced by reason of the fact that they have become self supporting has been a factor in stimulating the men to greater effort. In earnest work the returned disabled soldier finds once more contentment and a normal outlook on life.

The medical aspect of industrial re-education presents three phases:

1. The examination of the man to determine whether or no he will be able to carry on in the occupation which he wishes to learn.

2. His medical care whilst undergoing industrial re-education, for it is important that there should be no return to idleness or the least break in the continuity of his training.

The Department of Soldiers' Civil Re-Establishment gives these men medical care during the period whilst undergoing this training whether their sickness or disability is the result of war service or not. The ultimate economic value of such an arrangement is easily understood.

3. The medical examination of the industrial worker whilst taking his course of training in order to ascertain whether or not the work is having a deleterious effect upon his disability.

It is important that wherever possible the vocational medical officer should have some knowledge of mechanics or some knowledge of the various industries in which the men are about to engage. It is a matter of considerable difficulty for the average physician to estimate just what disabilities or diseases preclude the various occupations, but experience in this branch is being rapidly gained by the physicians who have undertaken this important and interesting phase of the work of rehabilitation.

The Department of Soldiers' Civil Re-Establishment is charged with the medical care of the tubercular, insane, epileptic, incurable and chronic cases or cases of long duration, and with the treatment of recurrences of war disabilities of every kind. Approximately one thousand of the last named class of cases are at present under treatment. A chain of sanatoria for the treatment of tuberculosis has been established from coast to coast. In some cases the provincial institution has been considerably enlarged by this Department; in other cases large hotels have been taken over and converted into temporary sanatoria and in still other cases sanatoria have been purchased or are being built.

It is satisfactory to know that a large proportion of cases of tuberculosis of the lungs either recover or become arrested. Cases of tuberculosis are discharged from the Department of Militia and Defence as soon as diagnosed and are taken on the strength of the Department of Soldiers' Civil Re-Establishment for clothing, pay and allowances, and medical treatment. In so far as their physical condition will permit they are given classes in vocational training or industrial re-education while undergoing treatment.

There is no doubt that vocational training such as is given in the various sanatoria has a marked curative value in the treatment of tuberculosis. The patient does not find his stay in the sanatorium uninteresting or wearisome. He has something to occupy his attention and to keep up his interest in life. He has little time to brood over his condition. Arts and crafts, cabinet making, wood-work, basket weaving, gardening, stenography, telegraphy, etc., as well as the general education are all taught in the sanatoria. Whereas, in the early years of the war, before vocational training was introduced in the sanatoria, it was difficult to retain the patients, who often became restless under the

monotony of sanatorium treatment, under the present system it is seldom that they are not contented to remain until their cure is satisfactorily advanced or completed.

Up to the present, with the exception of the Newmarket Hospital (150 beds) close to the city of Toronto, the permanently insane have been taken care of by the Department of Soldiers' Civil Re-Establishment in the various asylums or hospitals for mental diseases throughout the Dominion. In some provinces this arrangement has proved quite satisfactory, but in a few cases the local asylums are not all that could be desired, and it is probable that one or two more institutions will have to be built by the Department of Soldiers' Civil Re-Establishment in order that insane patients may receive the most up-to-date treatment and the best care which it is possible to provide.

It is expected that an Epileptic Colony for the care and treatment of ex-soldiers suffering from this condition will be opened up during the year 1919. This will take the form of a farm colony and will probably be based upon the same system which obtains in the large epileptic colonies of the United States where industrial training, farming, fruit growing, etc., is made a part of the daily routine. At present there is no law whereby epileptics may be placed in institutions without their consent, but in so far as such patients or their guardians may consent to institutional treatment or to segregation, they can be taken care of at such a colony, under the direction of the Department.

It is impossible to overestimate the importance of this new Department or to outline at the present time the vast extent of the work which the future will demand, but it is conceivable that, with a half million enlistments, the work will be very extensive and for many years to come will call for the employment of the best surgeons and physicians in the land.

As a temporary measure, the Department of Militia and Defence has arranged that ex-soldiers or sailors may be returned as civilians to military hospitals for treatment of recurrences of war disabilities after discharge from the service. This has prevented any confusion or break in the continuity of treatment. However efficient our military hospitals may be,—and they are efficient, the return of the ex-soldier to them places him in the anomalous position of a civilian in civilian clothing in a military environment where the other patients are in uniform and under military discipline.

The principle of a civilian department taking medical charge of the ex-soldier is recognized as a sound one and has been adopted in Great Britain.

While in certain orthopædic and neurological cases it is desirable, wherever possible, that the discharged soldier should be returned for treatment under his former military physician or surgeon—and this policy is being followed in general—this is not always practicable. In many instances the patient has been transferred from one part of Canada to another and is far removed from his former station. As a civilian too, the patient often has strong objections to being returned to a military institution for treatment and claims as his right that he should be placed in a civil hospital.

Apart from the consideration of the patient's personal wishes, it is essential that his commencing re-establishment in civilian life should not be interrupted or again influenced by periodical returns to a military environment.

Now that the war is over, and the work of the military hospitals within a few months will reach its height, it is altogether probable that the number of patients discharged to the Department of Soldiers' Civil Re-Establishment will rapidly increase; and with this increase in work it is proposed to establish general hospitals throughout the various provinces of the Dominion. In most instances it will no doubt be possible to secure hospitals which are being utilized at the present time by the Department of Militia and Defence.

There can be no doubt that the sooner the soldiers are in a fit physical condition to be discharged from the army and placed in civil hospitals, the sooner they will commence to think of their future, and to realize the necessity of again assuming personal responsibility with regard to making a livelihood—an end which will assist greatly in the problem of rehabilitation.

The Drummond Street Hospital (250 beds), Montreal, has already been transferred to the Department of Soldiers' Civil Re-Establishment, and is the first of the general hospitals to be organized and established by this Department.

One of the principles of the Department of Soldiers' Civil Re-Establishment is, that, as far as possible, ex-military medical officers who have had experience overseas shall be employed in the treatment of these patients in civil or Soldiers' Civil Re-Establishment hospitals. The Department with its medical and

vocational services—its re-educational system for the disabled—will do much to avoid what in former wars seemed inevitable, viz.: large institutions for the cure of the crippled and inefficient. The great mass of disabled soldiers to-day know that much may be done for them, and in this knowledge they are striving earnestly and successfully toward the goal of efficiency and self-support.

The keynote of modern surgery is simplicity. Belief in the virtues of absolute cleanliness in surgery as represented by a thorough use of soap and water in the place of many antiseptics, is coming into the foreground. It was obvious that antiseptics might kill germs, yet they did not necessarily remove dirt, and now the most careful surgeons regard soap and water as the common defence against infection, and the thorough use of it better than if an antiseptic is employed. To this advantage may be added others. Healing of wounds goes on without much fever, and in most cases the men are convalescent in ten days. As a rule it is not necessary to put in drainage tubes, for there is little discharge. Germs that ordinarily infect wounds are driven out with the dirt and succumb to the natural influences of cleanliness and fresh air. Apart from the question of wounds and personal cleanliness, experience shows that there is little value in the ordinary methods of fumigation and disinfection, unless soap and water and energetic use of elbows are first employed; and this is a remedy that every one can use with safety.

PRELIMINARY REPORT ON INFLUENZA EPIDEMIC AT BRAMSHOTT IN SEPTEMBER-OCTOBER, 1918

By C. E. Cooper Cole, B.A., M.B.

Lieutenant-Colonel C.A.M.C., No. 12 Canadian General Hospital, Bramshott

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INTRODUCTORY NOTE BY

Colonel R. D. Rudolph, C.B.E., M.D., F.R.C.P.
Consulting Physician to the Canadian Forces in England

Colonel Cole and his officers have had a most extensive experience of influenza in the recent epidemic. The notes of the complications of the disease are very valuable, for example—the frequent rupture of the recti-abdominales muscles. I have not been as much struck as the writer was by the fætor in the disease.

The frequency of relapses has been very noticeable, these relapses often occurring several (in one case ten days) after the temperature had originally returned to normal. Such relapses occurred while the patients were still in bed and hence were not due to any chill or exhaustion.

The mortality of the cases admitted to hospital works out at 7.25 per cent. and of all the cases reported in the camp, 3.6 per cent., which is noticeably higher than in the original epidemic of the spring, but low as compared to some reports of recent ravages. Death was practically always due to respiratory complications.

AFTER the outbreak of influenza in May and June, our hospital had only occasional admissions of cases of this disease until the latter part of September. On the twenty-fourth of that month three cases reported, and on the succeeding days nine, seventeen, twenty-four, twenty-six, reaching a maximum of one hundred and

seventy-four on October 5th. Since then the epidemic has been abating and on November 7th the total "flu" admissions were only twelve.

In all, 2,247 cases have passed through hospital out of an incidence of about 4,500 cases in the area. One hundred and sixty-three had a fatal termination, the period of illness varying from five to twenty-seven days, and the pathological changes affecting the lungs or myocardium.

The usual history was of sudden onset of chilly feeling, headache, general aching, and weakness with dizziness. Then cough and tightness in the chest with glairy sputum and very frequently epistaxis. Objectively an indescribable fœter was present in even the mildest cases, and, in the very severe, was almost overwhelming. It disappeared before complete recovery of the patient. The febrile course of the disease varies from twenty-four hours to fifteen days, continuous fever, running as high as 106·6, inclined to be remittent and ending by lysis. The types might be considered as (*a*) mild, temperature becoming normal within three to seven days without disturbance of pulse or respiration. Considerable weakness persisted and renal irritation was usually present. Even these mild cases showed tendency to tachycardia on slight exertion in convalescence. (*b*) The next grade of severity ran a central course of five to twelve days with high fever, marked cyanosis or livid pallor and rapid respiration; all evidences of severe toxæmia, with very few signs in the chest except of the diffuse emphysema or of a bronchitis down to the capillary tubes with sputum moderate to copious, glairy to muco-purulent, to yellow-green purulent, becoming dirty sanguino-purulent to dark clotted blood. In some cases bright red blood was expectorated, as much as four ounces at a time and one case, for which no other cause could be found, proved fatal from hæmoptysis. A number of these cases proved fatal, and shewed peribronchial induration or patchy central broncho-pneumonia. (*c*) The most severe types were either (1) primary marked bronchitis with profound toxæmia, rapidly becoming pneumonic, or (2) a primary toxic type as in (*b*) above, the temperature falling to normal or thereabouts for one to six days and then rising again to a secondary severe pneumonic course, with a frequently fatal issue.

Some peculiar clinical and pathological features were noticed in this series of cases. In the first place very marked fœtor of the exhalations, so offensive in some cases as to render careful chest examination difficult, was pathognomonic.

The respiratory tract shewed marked congestion from the nares to and through the pleura. The respiratory rate was frequently out of all proportion to pulse or temperature, fifty to the minute being often maintained for a week, with pulse not above 110. Rhinitis with epistaxis, often recurrent, was present in over one-third of the cases. Pharyngitis, tonsillitis, laryngitis, and tracheitis (often pseudo-membranous causing dyspnœa, stridor and inspiratory retraction of lower ribs), bronchitis and bronchiolitis. The cough shewed several types—(1) explosive, (2) paroxysmal, closely resembling pertussis and in a few cases was (3) "brassy". The bronchitis, at first dry, afterwards usually became moist with abundant muco-purulent sputum. The inflammatory condition extending deeper, lobular and pseudo-lobar pneumonia of variable extent developed. Fibrinous, sero-fibrinous and sero-purulent pleurisies occurred, sixteen cases shewing definite empyemata, streptococcic more frequently than pneumococcic on direct smear. Compensatory emphysema often developed out of proportion to areas of consolidation and in twelve cases with severe chest signs interstitial emphysema developed in the mediastinum and so extended up to the malar eminences and down over chest and abdomen. Only one such case recovered. Most of these cases shewed definite small pulmonary abscesses either in continuity with the mediastinum or parieties. No cases of pneumothorax were observed. Areas of hæmorrhage into the lung tissue were so often seen, in various stages from recent occurrence to liquefaction, that this condition might be considered almost pathognomonic of the disease. One very toxic case died from sudden onset of pulmonary œdema on the eighth day with very little consolidation. Several cases shewed only "purulent bronchitis". Four cases shewed activated pulmonary tuberculosis. Two of these became miliary, two miliary of the lungs, and one of the latter developed tuberculous basal meningitis.

Circulatory effects. The early cyanosis was toxic rather than from asphyxia. The tongue itself was often of dark indigo and the whole body of a lilac tint for several days before death. Pulse usually relatively slow, *e.g.*, respiration 40, pulse 88, temperature 104 degrees and often dicrotic. The systolic blood pressure in previously healthy young adults often ran below 100 mm., and the diastolic could hardly be estimated. In only one case was recent pericarditis found and no recent endocarditis. The main change was myocardial but rarely accompanied by right heart dilatation. The circulatory failure was often of very sudden onset, a pulse of 100 of

good quality becoming 140 within two hours, and ceasing in less than four. The blood itself clots readily, though purpuric eruptions were noted in some cases, as well as hæmorrhages into the lungs and muscles. Phlebitis, brachial and saphenous, was not rare. There was usually a leucopenia, 2,400 to 9,000 white blood cells per c.cm. in purely toxic cases and even in extensive broncho-pneumonia, but with pulmonary abscess formation, empyæma or other septic complications, the count shewed from 9,800 to 24,000. This leucocytosis or else the local reaction seemed to render the prognosis more favourable though not invariably so.

Blood cultures were negative whether taken early or late.

The superficial and deep cervical and axillary lymph glands were almost constantly enlarged in severe cases. The peribronchial glands were much swollen and occasionally almost broken down. The intestinal and mesenteric glands were not enlarged even in the cases with diarrhœal symptoms. The spleen was rarely palpable nor found enlarged post mortem.

Digestive manifestations were variable. The usual febrile mouth with excess of slimy and most foul mucus. Amorexia, nausea, and vomiting were frequent, the latter usually exceedingly forcible, the vomitus consisting of large quantities of bright green fluid. Epigastric pain with some rigidity was a frequent complaint and jaundice of considerable degree was usually of bad omen, fairly marked hepatic degeneration and occasionally perihepatitis being found post mortem. Independent of purgation, several cases of profuse bloody diarrhœa and two of watery diarrhœa with severe colic occurred. Splenic and hepatic enlargement were rarely present. Abdominal distention was usually a late unfavourable sign. Lieutenant-Colonel J. G. W. Johnson had to operate on five cases of influenza complicated by appendicitis and found one gangrenous, one perforated, with abdomen full of cloudy fluid, and three acute catarrhal with the terminal inch of the appendix much congested. At autopsy many appendices shewed a peculiar bulbous terminal inch, with marked congestion of surface veins. In one case a mild serous effusion and in several enterospasm with slight ascites was observed. No lesions were observed in the gross in the bowel wall.

Genito-urinary signs. Pain across lumbar region was a common complaint and in almost all febrile cases a mild nephritis developed albuminuria, red blood cells and white blood cells, granular and hyaline casts being observed. In several cases the urine was distinctly bloody with decrease in quantity. Retention occurred in several,

but not suppression. No renal œdema was observed. Post mortem, many kidneys were acutely hæmorrhagic resembling scarlatinal nephritis. In over half a dozen cases there was swelling of the testicle and its coverings. One fatal case shewed the coverings principally involved and gangrenous, streptococci present in cultures. The others cleared up without suppuration. There were over thirty cases of swelling of the parotid gland and capsule, occasionally bilateral, sometimes associated with the preceding. These were not clinically epidemic parotitis, but allowed free movement of the jaws and the duct mouths shewed little change. One case suppurated. This complication occurred in one patient who had had mumps before.

Special senses. Hearing was very commonly dulled and Captain J. A. Atkinson reported frequent occurrence of hæmorrhage into the tympanic membrane. This occurred in some cases without pain, but in about forty there developed acute otitis and one quarter of these had mastoid involvement. Four cases of frontal and ten of maxillary sinusitis were observed. Loss of sense of smell with fœtid purulent nasal discharge and copious repeated epistaxis were observed. In several cases over twelve ounces of blood were lost at one bleeding, and packing had to be resorted to.

There was marked periocular puffiness as in whooping cough with conjunctival injection going on to pus formation and occasionally blepharitis was present.

Cuticular. Very frequently marked miliary sudaminal rash was present. Occasionally patchy purpura, punctate erythema, jaundice, and cyanosis, either turgid, livid, or ashy. One case shewed purpuric blebs. Some very delirious cases shewed marked *tache cérêbrale*. Interstitial emphysema occurred as described, Erysipelas of the face and the trunk with various local abscesses in the scalp, axilla, epitrochlear gland, and thigh occurred complicating the disease.

No definite *joint* lesions were observed but arthralgia in knees and shoulders was complained of, while a rheumatic fever, a gonorrhœal and a rheumatoid arthritis were lit up by the influenzal attack.

Myalgia and muscular weakness were very common symptoms. Abscesses were found in some muscles and marked degeneration was repeatedly noted in the rectus abdominis. The muscle looked grey, cooked, and readily flaked, three hours after death. Often there was marked hæmorrhage, as much as two ounces, into the

sheath of the rectus, and the muscles themselves were frequently found spontaneously ruptured as cleanly as though cut with a knife. The hæmorrhage was sometimes present throughout the length of the sheath from the costal cartilages to the pubis though usually only in the lower quarter. Myocardial degeneration was frequently very obvious at section.

Nervous system. Frontal headache and retro-ocular pain were of moderate severity. No breakbone pains were encountered. Pupils were normal and reflexes normal except knee-jerks, which were often difficult to elicit. Mild paræsthesia, involving the right leg, was noted in one case, and a transient Bell's palsy in another. Sleeplessness from toxæmia, not air hunger, was a trying symptom. In cases with fever, even of short duration, a low muttering delirium with tremor, singultus, and carphologia and occasional loss of control of organic reflexes, was frequently observed. Quite a number were very noisy and active in their delirium. Convulsions, cervical rigidity, opisthotonos and tetanoid spasms of hands and feet occurred in several cases: only one recovered. The spinal fluid was clear and culture negative. No increased cell-count was noted except in two complicating cases, (*a*) a hemiplegia due to tuberculous basal meningitis, confirmed post mortem, and (*b*) a case with marked stupor which is now apparently convalescing, but which has repeatedly shewn an increased cell-count on puncture with as much as 80 per cent. lymphocytes, and one film on one occasion shewed acid-fast bacilli. The brains, with the exception of one of these cases, have shewn no gross change.

The pathological work quoted above was in the main done by Captain A. Montgomery of this hospital.

Treatment. For purposes of treatment, our patients were divided into three groups under Major Pope, Major Shannon, and myself. All patients were put to bed in moderately cool rooms at earliest moment available, usually the fifth or sixth day of disease, and were not allowed up until the temperature had been normal for at least three days. In spite of this precaution one very mild case, whose chest had been negative, after a few hours up, developed a massive lobular pneumonia with evidence of myocardial degeneration and died within forty-eight hours. Posture in bed was used to allay cough and also to promote expectoration.

Fluids only, and very freely, composed the diet, on a basis of four pints and four eggs per sick man.

The initial purgative was in most cases calomel and epsom salts, the latter to be repeated as necessary, often with very marked

effects in lessening toxæmia. Simple enemata were also used, and turpentine for distension, effectually.

Local binders, mustard leaves, and plasters, poultices and cups were all used with relief of chest pain.

For various types of cough, balsamic inhalations were used as required, sedative and stimulant expectorant mixtures as indicated.

In some cases venesection relieved the toxæmia, especially if combined with (1) saline or (2) glucose and saline interstitially, intravenously or per rectum. Oxygen alone, or through alcohol was helpful in some purulent bronchitic cases, either continuously through Haldane apparatus, or intermittently by open method or subcutaneously.

The preliminary headache, general aching and chilly feeling were relieved by phenacetin, aspirin and Dover's powder, with hot drinks, in small doses.

Groups of cases were put on—

1. Urotropin.
2. Quinine sulphate.
3. Salol.
4. T. quinine ammon.
5. Soda salicylate.
6. Salicin.
7. Creosote and potash iodide.
8. Oil cinnamon.

These were all used in varying doses and none were found to exercise any specific effect. Acid carbolic was not used owing to frequent renal irritation.

9. Sera.—Anti-diphtheric, pneumococcic, streptococcic, staphylococcic, the last three being polyvalent, also normal horse serum, were used and seemed, in some cases, to reinforce the patient's resistance, but not to exert a specific effect.

10. Eusol has been tried intravenously, dose up to 250 c.c., so far with uncertain benefit.

To reduce temperature—(1) Sponges tepid to cold, or alcohol rub if above 104 degrees. (2) Cold pack to neck and chest. (3) Purgation and enemata. (4) Aspirin, grains 5 for single dose if not responding to the above.

Stimulants—Fresh air and oxygen, brandy or whisky up to an ounce every two hours, strychnine and atropine, strophanthin,

various digitalis preparations, camphor in oil, pituitrin, and adrenalin were each used, as indicated. Intravenous saline with or without glucose, 25 per cent. was also used.

Sedatives—Cool sponging, chloralamide, ammonium bromide and chloral, veronal, codein, heroin, hyoscine, morphine and atropine, Dover's powder, all p.r.n.

From the multitude of agents employed their comparative futility is obvious. The line to follow in treatment is "*primum non nocere*" and the more expectant and symptomatic the course, the more satisfactory will be the result. This becomes particularly plain on observing a very large series of cases such as the present epidemic has afforded us. The natural variations in the course of the disease are legion, our influence on them is problematical.

Prognosis. Early cyanosis, high fever and rapid respiratory rate are usually unfavourable, all being evidence of severe toxæmia. Relatively slow pulse rate is not necessarily favourable, though a high rate is always ominous. Development of local septic foci promises favourably, leucocytosis is usually favourable. The delirium may be intense early in the case and completely disappear, the patient becoming perfectly rational and conscious of a sense of well-being, although still intensely cyanotic and so dyspnœic that he can hardly answer questions, in fact, this condition may go on to within a few minutes of dissolution. Broncho-pneumonia is always serious, and, judging from post mortem findings, carnification and scarring of the lungs with probably bronchiectasis will be sequelæ inevitable in a great many cases.

I have the honour, with the kind permission of Colonel H. M. Robertson, to submit this provisional report. Full statistics are being prepared, but will not be available for a considerable period.

THE WORK OF A STATIONARY HOSPITAL IN THE FIELD

By Colonel S. Hanford McKee, C.M.G., C.A.M.C.

Formerly Officer Commanding a Canadian Stationary Hospital

MEDICAL and surgical work, especially surgical operations, form rather a small part of the day's work in hospitals with the expeditionary forces in France, or in the East. This fact has been a great disappointment to hundreds of surgeons in the past, and I expect will be so to many in the future. It matters not whether a hospital is designated a "Casualty Clearing Depot", a "Stationary" or a "General" hospital, they are in reality all "Clearing" hospitals, admitting and evacuating patients as quickly as possible, and differ only in the matter of size.

The routine is made up of the admission of patients, classifying them, getting their bodies and clothes clean, attending to any urgent professional work, and evacuating to England and the different depots as quickly as possible. The D.M.S. is interested chiefly in empty beds; not how many major operations you are doing daily, but in how quickly you are getting rid of your cases. He often wants beds in large numbers and in a great hurry, and, I am sure, looks with more pleasure at your empty bed state than on any other return. Nor is it always possible to please him in this respect, for, during periods of heavy casualties, one is taxed to his utmost, not only to find beds but even for tent space, where these worthy men may be given cover from the cold and rain.

At No. 1 Stationary—a tent hospital in France of two hundred beds—we have had as many as five hundred and sixty-four patients, while at Lemnos, though raised to four hundred beds, the number of patients ran anywhere from eight hundred to nine hundred. A favourite trick was to get you to evacuate every possible case, say two hundred, and then send you two hundred more with a polite note regretting they were unable to take away your two hundred patients. I once protested, but was told there was a war on. I was too delighted that this information was getting about to continue the conversation.

After a number of trials, the following method of admission was found satisfactory.

The Orderly Officer of the day acted as the admitting officer.

Read at the Medical Society of the C.A.M.C., Shorncliffe.

He generally knew an hour or two before a convoy was to arrive and usually was informed as to the number of cases, and whether they were walking or stretcher cases.

We used a large hospital marquee as the admission tent, and, after the patient had been examined by the medical officer, three clerks took down the following particulars:

No. 1, filled in A.F. 36, from which the Admission and Discharge Book, A.B. 27, was later written up.

No. 2, filled in the diet sheet, always putting in a diagnosis.

No. 3, took the particulars for a card index system, which we found a comfort and a joy.

Every mail brings one a long list of names. "Have you any trace of the following?" With the cards arranged alphabetically in a pigeon-holed box, we could look these up very quickly and with accuracy. We kept two boxes, one for patients in the hospital and one for those discharged, and on the latter a note as to their destination.

After the necessary forms were filled in, the patient was taken to an adjoining tent where he was stripped and given a bath. His clothes were quickly tied up, in an ordinary sack, and sent to the disinfector. After his bath the patient was given clean clothing and taken to the ward. The serious stretcher cases were, of course, taken straight to the wards. By means of a slate, with the hospital ward and bed arrangement scratched upon it, the admitting officer was able to designate what bed he wished a patient sent to. In that way we were able to keep medical, surgical, serious, and special cases grouped.

Most of the convoys arrived at night with the men hungry, tired, and sleepy. I have actually seen a man so tired that he was unable to keep awake, while his arm was being set. No matter what time of night a convoy arrived, the men were always fed and given a smoke and made comfortable for the night. I must say I have never been engaged in medical work which gave such a return as looking after wounded from the front. Unless there was some definite indication for interference, the patients were left severely alone until morning.

The medical officers began their rounds at 9 a.m. and saw all their cases first with a view to making out the ward returns. After that, operations, dressings, and other ward work were in order. It was necessary to insist that all ward returns be sent in before operative work was proceeded with as the returns from the hospital had all to be sent off before noon. I won't trouble you with any details about the returns rendered. I judge they were sufficient for all purposes.

At a meeting of medical officers at Valcartier, some one asked the D.M.S. what about holding office? I have thought of the answer many times. He replied, "That is one of the beauties of active service, there is no office." But that was before the world war. Now it's all office.

Hospital cases in France are classified as follows:

(a) Unevacuable to England within one month.
(b) Evacuable to England within three weeks.
(c) Fit to return to duty within three weeks.
(d) Fit to evacuate to convalescent depots within a few days.

The surgical work we were called upon to do, consisted mostly in giving infected areas free drainage, and the usual number of bullet and shrapnel extractions.

The most interesting cases from a clinical point of view were the trench or spring nephritis and the gas cases. We had a good many of the latter—non-septic pneumonias—who were very ill and who were treated with rare judgement by my chief medical officer, Captain Gwyn. There were also the usual number of ruptured eye-balls to attend to, and it took two mastoid operations to teach me that pain at the tip or any other part of the mastoid process was not a valuable clinical sign—not in a patient anxious to be operated upon or to be sent home to "Blighty".

Our evacuation return was sent in twice daily, at noon and at six p.m., to the embarkation medical officer. The cases for evacuation were classified:

Those for England.
Those for the venereal camp.
Those for convalescent depots or Base details.

The cases for England were classified as:

(a) Needing a swing cot.
(b) Needing inside cabin space.
(c) Deck or walking cases.

In due time, we were notified, generally by telephone, at what hour the different cases would be sent for. We had nothing to do with the question of transportation. This department was admirably managed by the British Red Cross Society.

Hospitals with the Expeditionary Force have then two duties to perform:

First: To return men to duty within three weeks, or

Second: To evacuate to England as soon as possible, doing in the interval only such emergency operations and other treatment as may be required.

AUTO-SERUM TREATMENT OF CHOREA*

BY

Alan Brown, M.B.
George E. Smith, B.A., M.B.
Gordon Phillips, M.D., C.M.

RECENT researches on the bacteriology of chorea have resulted in the repeated finding of a micro-organism either in the blood or in the tissues of the central nervous system. Contrary to this a great many skilled investigators have been unable to obtain positive findings. The organism most frequently found is a coccus belonging in the general streptococcus group and very similar to the coccus originally described by Poynton and Paine. Within the past three years many positive streptococcus cultures have been obtained in cases of chorea from the teeth and tonsils, while the blood cultures have been usually negative. These septic foci have in many instances been undoubtedly the source of the infection but unfortunately their eradication of these foci has not effected a cure of the chorea.

There are a large number of observers who believe that Sydenham's chorea is essenitally a manifestation of rheumatic fever and that it represents an organic disease of the brain which attacks all parts of the cortex equally and impartially. There is still some difference of opinion among those who hold this view as to whether the disturbance in the central nervous system is caused by the direct presence of bacteria or by the presence of bacterial toxins absorbed from some other part of the body.

There are many who believe that chorea is always a manifestation of infection, that rheumatic fever is the commonest infection which produces such manifestations, but that other infections may at times produce the disease. This view would explain the cases which occasionally have been observed to follow other infections, such as scarlet fever. It is interesting to note that the other diseases with which chorea has been associated are conditions in which streptococci are frequently found. Rosenow's

*From the Medical Clinic and Research Laboratory, Hospital for Sick Children. Read at the Hamilton meeting, May 30th, 1918.

observations on the transmutation of bacteria of the streptococcus pneumococcus group, and on the ability of this group of organisms to change their selective affinities from time to time are suggestive in connection with the occurrence of chorea, not only as a manifestation of rheumatic fever, but of other streptococcus infections.

On the other hand, other observers, while admitting the association of chorea and rheumatism, believe that chorea represents a functional disturbance due to a variety of causes, and amongst these causes, infection is one, and of the infections rheumatism the most common; in addition to this, however, they feel that the various factors of the hygiene and environment, which produce functional disturbance in general, may be responsible for some cases of chorea without the medium of infection. This view might possibly explain the instances in which chorea has apparently developed after a fright or mental shock.

The question of the pathological anatomy of chorea is closely connected with that of its bacteriology. The view appears to be gaining ground that chorea does not represent a functional disturbance of the central nervous system, but that it is characterized by organic lesions of the brain, which, while only temporary are none the less actually present. Loubet concludes that the lesion is a mild encephalitis caused by the toxins absorbed from an infection without the actual presence of organisms in the tissues of the nervous system. The majority of French observers appear to hold this view. Both American and European observers have noted the appearance, at autopsy, of congestion, thrombosis and peri-vascular infiltration with small cells, while Poynton and Paine have in addition noted streptococci in the pia mater as well as in the brain itself.

The relationship of chorea to syphilis has been suggested and disproved. The changes in the blood and spinal fluid have also been intensively studied but nothing of any importance has been found.

In 1912 A. L. Goodman of New York was attracted to the subject of chorea therapy when two of his cases developed classical symptoms of miliary tuberculosis and died. At autopsy it was found that the tubercles were restricted mostly to the central nervous system. It occurred to this observer that the inability to properly bring about a cure was due to the fact that all previous methods employed were ineffective in that they did not reach the seat of the trouble, which exists in the central nervous system. Being thoroughly convinced of the infectious nature of the malady

he felt that any measure directed to the central nervous system would be of great benefit.

It is not within the scope of this paper to discuss exhaustively the theoretical aspects of this treatment. There are many gaps in our knowledge, both of the pathology of chorea and of the drainage of the subarachnoid space and the ventricular system which must be filled before we can expect a very satisfactory explanation.

In view of the fact that chorea is generally recognized as a bacterial disease due to a streptococcus of the viridans group, certain antibodies must perforce be in the circulating blood plasma, which antibodies do not enter the cerebro-spinal fluid on account of the choroid plexus which does not permit the transmission of these antibodies into the spinal canal. When the serum is injected into the canal, certain chemotaxic action takes place and the walls of the choroid plexus again become permeable.

Technique

It is most essential that both tuberculosis and syphilis be excluded and that all drug therapy be suspended for at least five days previous to the injection. Most serious results have been encountered when this latter point has not been adhered to. Drugs circulating in the blood plasma have a much more potent effect when injected into the spinal canal and serious results are thus obtained, particularly after the use of salicylates, when very toxic symptoms of salicylic acid poisoning have appeared.

In practically every instance the treatment was administered in the out-patient department, the patients returning home within an hour or two following the injection.

The first step consists in withdrawing about 50 c.c. of blood from the median basilic vein. In some instances an anæsthetic is necessary, as the patient is often too nervous to keep still sufficiently long to obtain the amount of blood required. Ethyl chloride is the anæsthetic employed. It is important to have the tourniquet applied just tight enough to impede the arterial flow; of course one soon empties the arm of the venous blood and no more can be obtained until the tourniquet is released. A nice plan in this connection is to use a blood pressure band on the arm and have it inflated to about two thirds the blood pressure. The blood is received into three sterile test tubes; the rubber tubing and needle having been previously sterilized and held, so that the opening in the test tube is protected from contamination, by a

piece of sterile gauze wrapped about the rubber tubing down to its point of entrance into the test tube, the gauze from there on being held about the test tube. The tubes are stoppered with sterile plugs and set aside for a few minutes to allow the blood to clot. Before putting them into the centrifuge, a sterile platinum wire is run down each tube to separate the clot from the side so as to facilitate obtaining the greatest amount of serum possible. The test tubes are then put in the centrifuge for thirty to forty minutes. At the end of that time the serum is drawn up in a sterile pipette, emptied into a sterile test tube and put in the incubator to keep at the proper temperature for injection. In our first few cases the serum was inactivated before injection. At present we are omitting this, trusting to our technique to keep the serum sterile. From 50 c.c. of blood we obtain 20 to 25 c.c. of serum. The preparation of the serum takes about one to one and a half hours. The patients come to the out-patient department about 9 a.m. and the serum is ready at 11 a.m.

The patient is prepared as for lumbar puncture. As an anæsthetic is necessary they have no breakfast. The serum is drawn into a 20 c.c. record syringe which fits the ordinary lumbar puncture needle. The patient is then anæsthetized with ethyl chloride, the needle inserted and about 20 to 25 c.c. of spinal fluid withdrawn. The record syringe is then attached and the serum slowly injected. This is the crucial step in the operation, as it is essential to give as much serum as possible without causing pressure symptoms. As one slowly injects the serum, when sufficient has been injected, one feels an obstruction to the entrance of the serum. This is very definite and tells the point at which to stop. Injecting more, after this resistance has been encountered, invariably results in marked pressure symptoms such as vomiting, severe headache, elevation of the temperature, etc. An anæsthetic is necessary to enable one to detect this sense of resistance. In our series of cases we have used an average of 17 c.c. of serum.

The patients are kept in the hospital from one to two hours to be watched for pressure or heart symptoms. They are then sent home to bed for one week, when they return to the hospital. In the interval, the public health nurses visit them to see that instructions are carried out. Usually improvement follows in two or three days and becomes stationary again by the end of the week, when another treatment is given.

Following the injection there may be a mild disturbance, such as, slight rise of temperature, a slight stiffness of the neck, increase

in pulse rate. This rapidly passes off. Nothing solid is given to eat for six to eight hours following the treatment.

Case Reports

Case 1. G. C., male, eight years of age, admitted to medical clinic, September 8th, 1917, complaining of slight twitching of hands and face extending over a period of one year. Examination revealed numerous decayed primary teeth; tonsils were large. On same date the tonsils were removed and six defective teeth pulled, following which procedure the choreiform movements were decidedly aggravated and at the time of his first injection, September 20th, he was scarcely able to walk or hold objects in his hands.

First injection, September 20th, 20 c.c. serum intraspinously. Second injection, October 4th, 15 c.c. serum given—no improvement. Third injection, October 18th, 10 c.c. serum given, no improvement. Fourth injection, October 22nd 19 c.c. serum given, no improvement. Fifth injection, October 25th, 17 c.c. serum given, no improvement. November 17th returned to clinic very much improved, with scarcely any twitching. When last heard from on April 18th, 1918, his general condition was excellent and there was no evidence of choreiform movements.

Case 2. E. S., female, ten years of age, admitted to medical clinic August 13th, 1917, on account of twitching of face accompanied by irregular rotatory movements of right shoulder, of two months' standing. Tonsils had been removed one year ago on account of lack of response to medicinal treatment. She was given 12 c.c. of serum intraspinously, which was followed by more or less reaction, consisting of pain over body which persisted for eighteen hours; in one week's time she was completely cured.

Case 3. R. W., male, ten years of age, admitted to medical clinic April 16th, 1917, with a complaint of extreme nervousness associated with irregular jumpy movements of the left hand and arm which commenced four months previously. He was unable to pick up objects with the affected hand; easily stumbled and fell; in fact was so restless that his mother could not keep him in bed. The tonsils were found to be not only enlarged but diseased, and a presytolic murmur was present. On September 16th, 1917, in view of the fact that there was no response to medicinal treatment, he was given 12 c.c. of serum intraspinously; second injection September 12th, 15 c.c. of serum; moderate reaction

consisting of vomiting; some improvement noticed. September 20th, 15 c.c. of serum injected; considerable improvement; there was no reaction. October 25th, 15 c.c. serum injected; only an occasional twitching thereafter; marked improvement. April 18th, when last seen showed an occasional twitching although the mother said he was a different child.

Case 4. H. B., female, fourteen years of age, admitted to medical clinic August 27th, 1917, exhibiting general twitchings over whole body, particularly on right side of three months' duration. Tonsils enlarged and diseased. One month previous to onset of chorea had an acute attack of tonsillitis. August 30th, 10 c.c. serum injected, vomited several times after the injection. September 13th, 13 c.c. serum injected, very slight improvement. This patient was lost track of.

Case 5. J. F., male, twelve years of age, admitted to medical clinic, August 11th, 1917, with irregular spasmodic movements and twitchings over whole body; great difficulty in walking and feeding himself, of three weeks' standing. The tonsils had been removed four years previously. August 13th, 1917, 15 c.c. serum given, considerably improved. August 20th, 15 c.c. serum injected, very little further improvement. September 6th, 15 c.c. serum injected, very much improved. September 24th, 10 c.c. serum injected; twitchings still present but steadily improving. October 22nd, 10 c.c. serum given, no twitchings present. November 28th, when last seen showed no evidence of chorea.

Case 6. M. T., female, seven years of age; admitted to medical clinic July 27th, 1917, with severe jerking movements over entire body of one week's standing, 17 c.c. serum given intraspinously; at the end of one week's time there was no evidence of chorea.

Case 7. D. R., female twelve years of age, admitted to medical Clinic May 7th, 1917, with irregular spasmodic movements of the extremities of three months' standing. Throat appears normal; a mitral systolic murmur present; has suffered several attacks of severe sore throat in the past. May 10th, 1917, 15 c.c. serum injected, slight headache; vomited several times, very marked improvement May 28th, no twitching.

Case 8. D. M., female, fifteen years of age, admitted to medical clinic July 11th, 1917, with twitching movements of all extremities and inability to talk, extending over a period of six months, previous treatments including rest and medication having made no impression on the progress of the condition; 18 c.c. serum

injected; severe reaction. This patient did not return to the clinic because of the severity of the treatment, but it was subsequently ascertained that her choreiform movements had disappeared one week following the injection. When last seen by the public health nurse November 21st, 1917, she was normal.

Case 9. C. M., female, nine years of age, admitted to medical clinic May 17th, 1917, with irregular movements of face, hands, and arms, of three weeks' duration, becoming rapidly worse. This patient was unable to feed herself and had difficulty in standing. Tonsils were removed in 1914. May 28th, 1917, 17 c.c. serum injected intraspinously, very severe reaction, the patient continuing to vomit for one week following the injection; in spite of this, however, there was an immediate improvement and by June 28th there were no manifestations of chorea. On October 22nd, when last seen, there had been no recurrence.

Case 10. H. A., female, twelve years of age, admitted to medical clinic, April 30th, 1917, jerking movements of left arm, hand and leg; unable to speak and great difficulty in feeding herself; of three days' duration. May 10th, 1917, 15 c.c. serum injected; vomited several times; moderate reaction; some headache; slight improvement. May 21st, 1917, slightly increased movements, 15 c.c. serum injected followed by pronounced improvement; slight reaction in the form of headache. July 15th, 1917, very much improved. July 28th, 1917, 17 c.c. serum injected; movements completely disappeared.

Case 11. P. C., male, eight years of age, admitted to medical clinic, May 14th, 1917, for spasmodic movements of legs, arms and face, off and on for a period of two years. Tonsils removed three years previously. May 17th, 15 c.c. serum injected; considerable improvement. May 28th, 17 c.c. serum injected. June 11th, no sign of chorea.

Case 12. R. McD., female, eleven years of age, admitted to medical clinic, July 27th, 1917, with tremor in both hands and general weakness. Five years previously had a similar attack lasting three months, and rheumatic fever one year ago. August 2nd, 14 c.c. serum injected; slight headache; wonderful improvement. August 11th, no evidence of chorea. May 9th, 1918, was in excellent health when last seen.

Case 13. A. A., male, ten years of age, admitted to medical clinic May 23rd, 1917, with twitching of arms and legs, of a week's duration. Tonsils enlarged and diseased. On April 23rd, 15 c.c. serum injected, slightly improved. May 28th, 15 c.c. serum

injected, considerable vomiting; no improvement. June 11th, 12 c.c. serum injected. This patient refused to return on account of the severity of the treatment but a report from the private physician reveals that the child was completely cured.

Case 14. L. B., female, thirteen years of age; admitted to medical clinic, March 1st, 1917, with spasmodic movements of arms and legs, particularly on the right side; twitching of facial muscles and impairment of speech, mitral regurgitant murmur. Tonsils were removed one month previously having suffered from tonsillitis repeatedly. One intraspinous injection 15 c.c. resulted in a complete cure.

Case 15. L. P., female, thirteen years of age, admitted to medical clinic, November 21st, 1917, with twitching of head and arms, frequently dropping objects, for the last three weeks. November 1st, 10 c.c. serum injected, moderate reaction with headache; very pronounced improvement. November 8th, 11 c.c. serum injected; no reaction, cured. April 22nd, 1918, no evidence of chorea.

Case 16. F. T., male, seven years of age, admitted to medical clinic April 1st, 1918, with weakness of left side of body and jerking movements of the hand and arm, of two weeks' duration; difficulty in feeding himself. Tonsils enlarged and diseased. April 4th, 15 c.c. serum injected, condition about the same. April 11th, 21 c.c. serum injected, slightly improved. April 25th, 22 c.c. serum injected, considerably improved, reaction more pronounced. May 9th, no evidence of chorea.

Case 17. F. C., female, five years of age, admitted to medical clinic May 7th, 1917, with irregular movements of arms and legs, difficulty in feeding herself and also in walking; two weeks' duration. Tonsils slightly enlarged and inflamed. May 10th, 15 c.c. serum injected, severe headache and vomiting; considerably improved. May 21st, 15 c.c. serum injected; movements slightly increased. June 4th, 15 c.c. serum injected, very much improved; can feed herself. June 28th, 15 c.c. serum injected, all signs of chorea disappeared. May 2nd, 1918, no return of the chorea.

Case 18. P. G., female, nine years of age, admitted to medical clinic April 15th, 1918, with irregular movements of hands, arms and head; off and on for six years. April 22nd, 18 c.c. serum injected, very much improved. May 2nd, 20 c.c. serum injected. May 9th, 16 c.c. serum injected. Choreiform movements disappeared.

Case 19. W. H., female, nine years of age, admitted to

medical clinic January 3rd, 1918, with irregular twitchings of the extremities, on and off for one year; partial paralysis of the right side. Tonsils removed one year and a half ago. January 10th, 18 c.c. serum injected, slightly improved. January 17th, 20 c.c. serum injected, decided improvement. February 14th, no evidence of chorea. April 17th, no evidence of chorea, although the child has a facial tic.

Case 20. S. B., private patient, male, age eleven years, twitching of all extremities to marked degree; mitral systolic murmur present; tonsils diseased. November 23rd, 18 c.c. serum injected, mild reaction. November 27th, much improved. November 28th, 20 c.c. serum injected, marked improvement. December 7th, 24 c.c. serum injected, improving. December 15th, 24 c.c. serum injected, cured.

This patient was one of the most severe and was so bad that he could hardly walk or talk.

Case 21. E. W., private patient, nine years of age. First seen December 7th, 1917, for general twitchings, difficulty of speech and in taking food; of one month's duration. Tonsils enlarged and diseased. December 20th, 20 c.c. serum injected after which twitching almost disappeared; mild reaction. December 27th, 24 c.c. serum injected, very little evidence of chorea remaining. January 6th, 1918, 25 c.c. serum injected, choreiform movements entirely gone. When last seen in April, 1918, the child's physical condition was much improved and there was no evidence of the previous infection.

Case 22. R. K., private patient, eleven years of age, first seen June 6th, 1918, with severe twitching movements of the right side and difficulty in speech. Tonsils had been partially removed three years previously and there was evidence still of a good deal of infection remaining in the unremoved portions. June 12th, 12 c.c. serum injected, no reaction, slight improvement. June 20th, 20 c.c. serum injected, vomited for two days following this injection, after which there was a very pronounced amelioration in symptoms. July 3rd, 14 c.c. serum injected, no reaction, choreiform movements disappeared. July 17th, remainder of tonsillar tissue removed. When last seen, August 14th, 1918, his physical condition was much improved and there was no sign of chorea.

Case 23. M. E., private patient, fourteen years of age, first seen July 25th, 1918, for generalized twitching of all the extremities with slight difficulty in speech and feeding herself. The tonsils

were much enlarged and badly diseased. July 17th, 25 c.c. serum injected, vomited once, severe headache for two days, very marked improvement in the twitchings. July 28th, 22 c.c. serum injected, slight reaction, much improved. August 9th, no evidence of choreiform movements.

Of the series of twenty-three cases observed over a period of almost a year and a half, 77 per cent. were cured, 19 per cent. improved, and one case unimproved, this one having refused further treatment on account of a severe reaction. Of the cases observed over this period of time there has so far been no recurrence. In all instances, except six in which tonsils were removed, there were observed what were apparently foci of infection, which were attended to after the course of treatment.

Of the twenty-three cases, seventeen were of a mild degree and five were severe. In four instances the duration of the disease was over a year, while the remainder showed symptoms on an average of six and a half weeks' standing.

The average number of injections given were three; several were given only one injection, while in one instance five were administered before a cure was affected. The average amount of serum injected was 17 c.c. Nineteen cases were cured in three weeks and four were cured within one week. All the severe cases required more than one injection.

Discussion

In practically every instance there had been previous medical treatment given with the usual indifferent and unsatisfactory results. In most cases there was a mild reaction in the form of vomiting and an occasional rise of temperature; on only one occasion was the reaction of such a nature as to prevent the return of the patient to the clinic and that owing to parental objection. The withdrawal of an amount of spinal fluid equal to that of serum injected did not appear to be necessary.

It occurred to us that failure to obtain satisfactory results and prompt reaction might be due to the lack of sufficient antibody production in the plasma. This, to us, seems quite within the limits of possibility taking into consideration the varying susceptibility to disease.

Results

1. Auto-serum therapy in our hands has been productive of infinitely more satisfactory results than any other form of therapy, a cure of 77 per cent. of the cases being affected within three weeks' time.

2. The technique is so simple that it may be employed in any home or out-patient department under mild anæsthesia.

3. With the observance of proper precautions the reactions are negligible.

4. There have so far been no recurrences in over a period of a year and a half, but more time is necessary in order to give a certain decision on this point.

The authors desire to express their appreciation of the co-operation of the house staff and nurses of the hospital.

Bibliography

Poynton and Paine—"Researches on Rheumatism," London, 1913.

Rosenow—"On the Transmutation of the Streptococcus Pneumococcus Group." *Jour. A.M.A.*, 1913.

Loubet—*Thêse de Toulouse*, 1912.

Goodman—"Auto-Serum Treatment of Chorea." *Archives of Pediatrics*, 1916, 33, pages 649-653.

Leopold—"Studies in the Chemistry of the Spinal Fluid in Children." *American Journ. Diseases of Children*, January, 1917.

Faber—"A Trial of Goodman's 'Auto-Serum Treatment of Chorea.'" *Cal. State Journ. of Med.*, vol. xv., No. 1, page 27.

TRINITROTOLUENE POISONING

By Henry Odland, M.D.

(From the Pathological Laboratories of the Royal Victoria Hospital)

THE reports on trinitrotoluene poisoning which have appeared during the past two or three years deal mainly with the clinical symptoms and findings and the prevention and treatment of the disease. Reports on the post mortem findings are very meagre, both with reference to detailed anatomic changes and the nature of the poisoning.

It is now generally conceded that absorption of the substance by the body may take place either through the skin and digestive tract, or by inhalation of the fumes, or by a combination of these methods. Trinitrotoluene has been recovered unchanged from the fæces and has also been detected in the urine.

The paucity of reports on the pathology of the disease is probably partly due to the fact that relatively few cases terminate fatally. The most comprehensive report is that of an official communication by the British Ministry of Munitions[1] which gives the following summary of the post-mortem findings:

"The outstanding feature is the atrophy of the liver, which in acute cases is reduced to one half the normal weight. The outer surface is smooth, reddish in colour, with slightly elevated gamboge-coloured areas of various sizes. On section in the red areas the tissue is smooth, flat, firm; the normal lobular pattern is absent, the portal systems being set very close to one another; in the elevated yellow islands the tissue is bulged and soft; an indistinct lobulation is visible, the lobules being larger than normally. Ascites is sometimes present. The bile in the gall bladder may be unusually viscid. The kidneys on section are enlarged and icteric; the cortex bulges and the labyrinths are frequently conspicuously yellow. There is considerable engorgement of the pyramids. The mycocardium is pale, soft and flabby. Petechial and diffuse hæmorrhages are generally found beneath the endocardium, the

Read at the forty-eighth annual meeting of the Canadian Medical Association, June 14th, 1917.

pericardium, and the peritoneum. They have been observed on the skin, on the rib cartilages, and elsewhere in the body.

"Microscopically a great part of the liver tissue is found to have undergone complete destruction associated with a proliferation of fibrous tissue. In these areas the necrosed hepatic cells have almost entirely disappeared. The areas of complete destruction correspond to the sunken red areas seen with the naked eye. Where the destruction is not complete the histological picture is almost identical with that of the early stages of ordinary portal fibrosis. The liver tissue is traversed by fibrous trabeculæ enclosing areas of degenerate, partly destroyed parenchyma; in the healthier parenchyma slight regeneration may be present. These areas of incomplete destruction correspond to the raised gamboge-coloured nodules seen with the naked eye. The kidneys show cloudy swelling and fatty degeneration in the tubules.

"The jaundice is possibly the result of obstruction, because in sections of the raised areas the bile dilated intercellular spaces have been found to be confined to the central portions of the lobules, whilst the portal bile-ducts have shown catarrhal degeneration and the portal ductules narrowing or obliteration of their lumina."

This report agrees fairly well with the observations of Spilsbury[2] and also the case reported by Livingstone-Learmonth and Cunningham[3]. H. S. Martland[4] reports a case without jaundice, having a severe anæmia and hæmorrhages from the mucous and serous membranes. Autopsy findings in this case were that of a severe acute aplastic anæmia. The liver which usually shows most marked changes, in this case showed only an increased iron pigmentation, and no gross or microscopic evidence of a toxic hepatitis. There was a great reduction in both white and red blood cells with little evidence of bone marrow regeneration.

Two similar cases were reported by the British Ministry of Munitions mentioned above. Both were unassociated with jaundice; one showing atrophy of the liver as in the ordinary cases, the other no gross lesions in the liver, whatever.

Report of Case

History: A male, age twenty, medical student, went to work in a Canadian munition factory about July 1st, 1916, and remained there for about eight weeks, when he became jaundiced and complained of pain in the abdomen. During that time he

was exposed to the vapours of trinitrotoluene, and was found on several occasions to have exposed himself voluntarily to the vapours of toluene.* The jaundice gradually increased in severity, but, after six weeks' treatment in the hospital of the factory, began to fade. Patient's general condition also improved, and he felt so well that he resumed in the autumn his studies in the medical school. Suddenly, on October 18th, he began to have hæmorrhages from the nose and bowel and into the subcutaneous tissue. He came rapidly weaker, collapsed and died ten hours after admission to the Royal Victoria Hospital, and within forty-eight hours after onset of the bleeding.

Physical examination on admission to hospital revealed a young man well nourished, and athletic, but in a state of marked prostration. The conjunctival membrane showed faint icteroid tinge. On the anterior surface of the left thigh there were many small purpuric spots or ecchymoses. Axillary and inguinal glands palpable. The anterior nares blocked with blood clots. The examination of the lungs was negative except at both bases, behind, where many medium-sized râles were heard, at the end of inspiration. Accentuation of the apical heart sounds as well as of the pulmonary second. Blood pressure, 110–60. White blood cells, 1,600. The abdomen was rounded, and there was a slight diffuse tenderness over the epigastrium. Liver dulness extended from the sixth rib in the mid-clavicular line to 3 cm. above the costal border. There was practical anuria, and on catheterization 5 c.c. of bloody urine were obtained. Patient was admitted during the night and died the following morning.

Autopsy, fourteen hours post mortem. Anatomic diagnosis: hæmorrhagic necrosis of the liver, degenerative nephritis, hæmorrhages into pelvis of kidney, ureters, pericardium, intestines and skin; œdema and enlargement of the lymph glands.

The body is that of a white male 170 cm. long of good physique and nutrition. No definite jaundice. On the thighs are numerous subcutaneous hæmorrhages or ecchymoses, the largest 1 cm. in diameter. The nostrils are filled with clotted blood, chest well formed, upper and lower limbs very muscular. On opening the abdomen the liver is just visible below the costal margin and 5 cm. below the ensiform cartilage in the midline. The dome of the diaphram is at the level of the fourth rib right and fourth space

*The vapours of toluene seem, according to the information of the physician at the factory, to possess intoxicating or exhilarating qualities.

left. There is a small amount of bloody fluid in both flanks. The heart weighs 300 gms., visceral pericardium shows small areas of ecchymoses; the heart muscle is pale in colour, quite firm and contains a few dark hæmorrhagic spots beneath the pericardium. The lungs are voluminous, mottled pink in colour, and there is marked crepitation. On section the surface is bright red, congested and dry; the bronchi are clear. Beneath the serosa of the intestinal loops are numerous irregular, large ecchymoses, and throughout the large and small intestines numerous small to large hæmorrhagic infarctions or ecchymoses are seen beneath the mucosa.

Liver: Weighs 1,760 gms. and measures 25 x 16·5 cm. The surface is generally smooth, bluish, and the capsule not thickened, but there are definite irregular, hæmorrhagic depressions which are partly streaky and partly patchy, and evidently correspond to collapsed areas. These are prominent over the right lobe. The left lobe is relatively small, flat, and smooth. On section the surface presents a very characteristic and unusual appearance. The whole left lobe is deeply and diffusely reddened, flat, and its vessels prominent. The liver tissue is collapsed, and markings are obliterated. The whole right lobe on the other hand, is generally pale gray, and shows tremendous parenchymatous swelling, which puts the lobular markings around depressed blood vessels into a definite relief network. Parts of the right lobe show extension of hæmorrhagic, depressed collapsed areas from the left lobe into its raised, swollen parenchyma. The blood vessels of the right lobe are injected, but bile ducts are not prominent, and the tissue is not visibly jaundiced. The termination of the parenchymatous swelling in the righ lobe is rather abrupt towards the left, and only a few bas-reliefs extend from the right into the left lobe, where they also terminate abruptly within the collapsed hæmorrhagic tissue. The gall bladder is filled with light brown fluid. The pancreas weighs 15 gms. and measures 17 cm. in length. It is rounded and flabby and dark in colour. On section, normal markings are indistinct. The spleen weighs 240 gms. The surface is smooth and dark red in colour. The cut surface is dark red, flabby and friable; the normal markings are indistinct. The mesenteric and retroperitoneal glands are enlarged and dark bluish in colour. There are palpable glands in the epitrochlear, axillary, and inguinal regions. The kidneys: The right organ is of usual size and shape, but appears darker than normal. The capsule strips easily and the surface is smooth. The cut edges bulge. The differentiation between the cortex and the medulla is poor. The pelvis is

distended and contains a large amount of dark clotted blood. The left kidney is similar in all respects to the right. The ureters are distended and also filled with clotted blood, completely obliterating the lumen. The bladder contains bloody fluid.

Histology

LIVER: In sections it is quite easy to differentiate between the diffuse hæmorrhagic areas and the swollen, paler portions. The hæmorrhagic areas show complete collapse and obliteration of the liver tissue. Lobular arrangement can only be determined by the markedly dilated central veins and the peripheral, interlobular structures. The whole lobule is replaced by red blood cells, blood and bile (?) pigment, nuclear remains and indefinite fibrils. This hæmorrhagic necrosis occupies the entire centre of the lobule and extends a variable distance to the periphery. As one approaches the interlobular spaces an infiltration by lymphoid and plasma cells becomes prominent and follows, more or less definitely, the course of the interlobular structures. Within these lymphoid cell infiltrations bile ducts are prominent.

The vessels of the interlobular tissue are dilated, and their perivascular spaces show similar cell infiltration. The portal bile ducts appear intact.

The picture of the swollen pale areas is as follows:

Around the central vein which is markedly dilated occurs irregular streaky necrosis which leads to destruction of the liver cells, leaving only blood capillaries and a fibrillar reticulum. These necroses are generally pale, and what blood appears in them is evidently still within vessels. They extend in streaks from the central vein to the interlobular spaces where they meet similar periportal, necrotic areas containing cellular remains. These periportal necroses show occasionally some lymphoid cell infiltration, but this, in this instance, is limited and frequently quite absent, and bile ducts are not conspicuous. Between these intercommunicating central and peripheral streaks and necroses rest bands and areas of liver cells, occasionally still in columns and containing fading red blood cells. The liver cells themselves are swollen, œdematous, often multinucleated, again atrophic and necrotic, a condition which seems to lead to gradually increasing separation of these cells. There is remarkable absence of fat, either in the form of intercellular infiltration or in the form of fatty cell disorganization.

It is interesting to note that these liver cells, although swollen and œdematous, do not show the general features of parenchymatous degeneration and necrosis, but rather a cytolysis incident to œdematous swelling and solution of cells, which reminds one much of the pictures seen in the cytolytic necrosis of liver cells in advanced venous stasis, fully described by Oertel (*Archives of Int. Med.*, 1910, vi, 293 and *Berliner Klin. Wochenschrift*, 1912, xli, 2019), and Symmers (*Jour. Exp. Med.*, vol. ix, 1907).

To recapitulate, then: The flat, red areas mostly conspicuous in the left lobe of the liver correspond to hæmorrhagic necroses with marked lymphoid cell infiltration from the interlobular periphery; the pale areas, constituting most of the right lobe of the liver, in which the parenchyma appears in relief, consist of intercommunicating central and peripheral pale necroses, which surround swollen and disorganizing liver columns. In these, hæmorrhages are almost absent, and portal, lymphoid infiltration is also much less marked.

A consideration of these findings in the liver points at first to a similarity with acute yellow atrophy and toxic lesions produced by certain poisons: central and peripheral necroses in lobules with swelling of the remaining liver cells, collapse of liver tissue leading to extensive hæmorrhages and gradually increasing lymphoid cell infiltration carrying many bile ducts from the interlobular septa—are changes similar to those in early and later stages of acute yellow atrophy. Closer investigation, however, shows many points of characteristic difference which stamp the lesion essentially different in genesis and histological features.

There does not seem much doubt that the paler portions represent earlier stages of this process; in them the necroses is limited, bands of liver cells and lobular arrangement are still preserved; hæmorrhages have not yet occurred, and perilobular lymphoid cell infiltration is absent or very limited.

These apparently earlier lesions display, as will be seen from the foregoing histological description, striking points of difference from those of acute yellow atrophy.

1. Cell death is not represented by coagulation necrosis which follows in the track of marked parenchymatous degeneration; (characteristic of toxins primarily attacking parenchyma cells), but seems to be mainly due to œdematous swelling and solution of cells. Thus there remains even in necrosed areas a plain fibrillar reticulum, and the cells at the periphery of these necroses are, although swollen and separated by œdema, unusually well

preserved in protoplasm and nuclei, a condition which almost immediately attracts attention and sharply accentuates the necrotic areas from the surrounding liver cells.

2. Remarkable absence of fat in the necroses or even at their periphery. Herein lies a most striking point of difference between yellow atrophy, certain other parenchyma poisons such as phosphorous and nutritive disturbances,—and this case.

Intimately connected with, and probably dependent upon, these two points is:

3. The general absence of bile stasis, bile thrombi, bile pigmentation and cholangitis in the early stages, and the presence of only limited bile precipitation even in the older hæmorrhagic zones.

4. The tremendous amount of interstitial œdema and widening of capillaries which, as far as can be determined, represents the earliest change, and seems to inaugurate the cytolytic necrosis which follows closely the vascular portal distribution.

If we take these points into consideration, we note them not only as points of difference between this lesion and acute yellow atrophy or other toxic disintegrations, but more especially as throwing light on the genesis of this disease and the toxic affinity of trinitrotoluene.

For from these findings it appears probable that trinitrotoluene is essentially and primarily a vascular poison (endothelial toxin) which injures the capillary cells and lymphatics and thus leads to massive œdema, which in turn is followed by cytolitic necroses following in the paths of this circulatory disturbance. The process leads sooner or later to collapse of liver lobules, extensive hæmorrhagic displacement, and later, as in other toxic liver destructions, to inflammatory interlobular cell infiltrations.

The supposition of the vascular character of trinitrotoluene poisoning is strengthened by the massive hæmorrhages in other organs.

Whether this condition, which is acutely and subacutely displayed in the liver, may also follow a more chronic course in which the anatomical expression more closely resembles subacute atrophies and liver cirrhosis, seems possible, but must be determined by future anatomical observations.

Spleen: There is a tremendous amount of blood and blood pigment in the pulp, with loss of pulp tissue. The Malpighian corpuscles are relatively prominent. The whole organ is swollen

and œdematous, and the sinuses are engorged with blood and pigmented cells.

INTESTINE: Sections of hæmorrhagic areas show marked œdematous swelling extending throughout all the coats, more especially in the submucosa. In it the blood vessels are filled with numerous thrombi, which give it an infarcted appearance. The mucosa overlying these areas is necrotic and shows some cell infiltration, but the muscular and peritoneal layers are intact. Enlarged lymph glands from adjoining mesentery shows œdematous swelling, with marked dilatation and catarrh of the lymph sinuses.

KIDNEY: The whole substance shows marked œdema and swelling which is especially pronounced in the interstitial tissues. The glomeruli are prominent and the capillary tufts engorged with blood, almost completely filling the capsule. In others the capillary loops appear fused, and the tuft plump and œdematous. The epithelium of the convoluted tabules is everywhere swollen and granular and in many places complete necrosis has occurred, leaving necrotic clumps in the lumen of the tubules. These changes are more or less limited to the convoluted tubules, while Henle's loops and collecting tubules show generally well preserved epithelium. The œdematous interlobular spaces show pinkish, widely separated fibrillæ and remnants of red blood cells, many of which are seen only in outline. In places the intertubular capillaries are engorged with blood.

The histological picture in the kidney seems to indicate that the cells of the convoluted tubules are at least equally involved with the vascular injury, for there the changes are quite characteristically those of parenchymatous degeneration and coagulation necrosis, thus differing from the parenchymatous disintegration in the liver. Whether this difference is due to a selective activity of the poison upon the cells of the convoluted tubules, or to the excretory activity of these cells, which would bring them into more direct contact with the poison or its products, as the result of its interference with body metabolism, must be left at present an open question.

The striking feature in this case is the abrupt and sudden fatal termination after the jaundice and other symptoms had subsided. The apparent fulminating character of the intoxication in this case therefore, probably exemplifies the true nature of the poisoning and gives a clearer picture of its genesis than some other reported cases in which atrophy of the liver was an outstanding feature. The cases which show atrophy of the liver associated with

fatty degeneration and fibrosis may be due to a more chonic and less violent intoxication.

I take this opportunity of extending my thanks to Professor Oertel for his assistance and the privilege of reporting this case.

1. "Trinitrotoluene Poisoning, officially communicated by the Ministry of Munitions," *Lancet*, London, 1916, 2, 1026.

2. Spilsbury, B. H.—"Toxic Hepatitis," *Lancet*, London, 1916, 1, 999.

3. Livingstone-Learmonth, and Cunningham, "Effects of T.N.T. on Women Workers," *Lancet*, London, 1916, 2, 261.

4. Martland, H. S.—"T.N.T. Poisoning," *Jour. A. M. A.*, March 17th, 1917, vol. lxviii.

A very important address was recently delivered by the Hon. W. F. Roberts to the Women's Institutes of New Brunswick. The address outlined the organization of the Department of Health recently established by the Provincial Government. The Women's Institutes represent almost all habitable territory within the province, and its numerous societies constitute a most important medium for the dissemination of knowledge and information for the well being and health of the people. It was on the occasion of its sixth annual convention that Dr. Roberts addressed the meeting. The point emphasized by the speaker was the medical inspection of schools and its effect upon future citizenship.

Editorial

PHYSIOLOGY AT THE BED-SIDE

DURING the past three generations pathology has gradually become a full partner of clinical medicine. Particularly is this the case in so far as the changes of structure and of growth, and the morbid processes producing them bear on disease. Chemistry also is at the present time gradually raising itself to its proper sphere of influence on clinical medicine. But physiology! where does it appear as a concrete aid to disease? Remembered in a hazy way as dealing with abstract functions, it has been neglected in the outlook of clinical medicine. True, a large number of abnormal conditions are called "functional". There are "functional" disorders of the circulation, nervous system, respiration, digestion, etc. They are considered to be independent of gross morphological change and therefore acquire a peculiar unimportance and are slurred over quickly. Through time these conditions have acquired a position of studied neglect which is really an acknowledgement of ignorance. It is easier for clinical medicine to give them a mysterious cognomen than to frankly own to their mystery.

What physiology says this generation, medicine adopts the next! This is not so much through ignorance or neglect as it is through lack of opportunity. Occasionally a clinician arises who adopts physiological methods in the study of the patient. In consequence an epoch in clinical medicine is established. Such an epoch has taken place during the past twenty years, which has placed the understanding of cardiac function in an entirely new light.

The fault is not altogether on the part of clinical medicine. The vast amount of physiological teaching and re-

search has been done upon the lower animals and even in many cases upon the isolated parts thereof. The direct application to the human organism of this teaching and research is very often obscure. It appears as if the physiologist does not consider his science applicable to the elucidation of concrete disorders of the human mechanism. Even medical students who are fresh from their physiological training seem confused as to how to apply their recently acquired facts to the medical problems before them.

A closer and more general co-operation between clinical medicine and physiology would be of great value to both of them. The physiologist would then be in a better position to appreciate the difficulties and obscurities of many of the common processes of disease. It would also give him an intimate knowledge of many physiological problems as yet unsolved. On the other hand the unique laboratory experience of the physiologist would smooth many of the everyday ruts impeding the advance of clinical medicine. The early disorders of function, which ofttimes precede the gross structural changes, might be recognized by him. Thus means could be adopted to control the condition before it had progressed beyond repair. Future clinical medicine must advance so that it will eventually be able to recognize the earliest manifestations of disease. In order to obtain this objective it must commandeer the assistance of chemistry and physiology.

Pathology and bacteriology have proved beyond dispute the necessity of the close co-ordination of their laboratories with the wards of the hospital. Chemistry has set its stamp plainly upon clinical work and as each year passes affords greater and greater proof of the value of its help in the early interpretation and recognition of morbid processes. The time has now arrived for physiology to claim its heritage in the laboratories of the hospital. The close association of the physiological laboratory with the wards will produce undoubtedly work and results little if at all secondary to that already accomplished by pathology and chemistry.

A NATIONAL RESERVE ORGANIZATION FOR CIVIC EMERGENCIES

A RESERVE organization, which can be mobilized in times of emergency, is one of the most striking lessons to be learned from the recent epidemic. Now that the relief bodies gradually disband, the advisability of a permanent relief unit is receiving wide consideration. It is proposed that the Canadian Red Cross in the near future extend its work to include civilian relief in emergencies of the type of the Halifax disaster, or any public event of a nature demanding immediate and substantial assistance. Local branches could be established throughout the larger Canadian cities all combined in a national association directed by a paid permanent secretary. Every city should be divided into districts, with suitable provision for headquarters at a moment's notice. In this way, should a catastrophe strike several districts, one section of the city would be able to operate emergency service. Mr. Falk, the director of the Social Service department at McGill University, has given many valuable suggestions on the subject, and observes that the first twenty-four hours following a civic catastrophe are the most precious for saving life and property. He urges the formation of local committees so thoroughly organized that every unit should clearly understand its duties in case of civic calamity, and be able to act with speed and efficiency. He advocates a nation wide organization on a civilian basis, and believes that the Canadian Red Cross would receive splendid support if it undertakes to extend its field.

The United States Public Health Service is already tackling the problem. It makes clear from the outset that it desires to aid and not supplant state and local health authorities in their work. It has issued instructions that all requests for medical, nursing, or any other emergency aid should come to the United States Public Health Service

only through the State health officer. In some cases the executive of the State board of health has been given appointment in the United States Public Health Service to act as field director. While the epidemic is subsiding along the Atlantic seaboard it is becoming prevalent in other states, and, in view of serious emergency demands, the Public Health Service issues a statement that physicians and nurses will still be needed. The latter were requested to apply to their local Red Cross chapter for enrollment and assignment to duty. Physicians who wished to undertake service in the State's Public Health Service were directed to communicate with the bureau representative in their respective states. In this way all available service was promptly requisitioned. Unquestionably all these powerful activities in both countries should and will centralize in a national reserve organization for civic emergencies. In this enterprise it is up to Canada not to follow the neighbouring Republic, but to march hand in hand.

Six distinguished surgeons of England, France and Italy have made a recent tour of the United States, and gave addresses on recent advances in war surgery at the College of Physicians and Surgeons, New York. Major George Grey Turner, of the hospital of Newcastle-on-Tyne and a veteran of Britain's Mesopotamian campaign, described the great strides made in the treatment of open wounds, and Colonel George Gask, D.S.O., consulting surgeon of the Fourth British Army, told of the modern treatment of fractures. He expressed the hope that, after the war, the world's medical men would arrange for a more intimate interchange of opinion and knowledge.

Lieutenant-Colonel Raffæle Bastianelli, of the Italian army, described new methods of treating cerebral wounds by which, he said, 52 per cent. were saved. Majors Pierre Duval and Adrien Piollet, of the French army, illustrated

with lantern slides the extraordinary rapidity with which wounds heal under modern surgical treatment.

Sir Thomas Myles, former president of the College of Surgeons of Ireland, gave important information on the recurrence of infection and disability months after patients had been discharged as cured, and stated that infections were often more serious in casualties generally regarded as of little importance.

It has been decided by the Congress of the United States that a drastic anti-narcotic law must be enforced to check the habitual use of morphine, cocaine, heroin and preparations containing other narcotic drugs. The drug habit had increased to such an alarming extent that, a special treasury investigating committee having been appointed, a partial report on the number of drug addicts actually under physician's treatment has been made. It is estimated that at least 1,500,000 persons in the United States are drug addicts, of whom 1,000,000 are known as such in their communities, and the balance are secret drug users. Full reports are expected to show 200,000 users within the former draft ages of twenty-one and thirty-one in New York alone. In New York City 8,000 have already been tabulated. The investigation also showed that thousands of drafted men have been dismissed from military camps after it was found they were drug addicts, and that this number included many who systematically developed the habit after being drafted, in order to insure dismissal. This condition is one reason given for the urgency of immediate remedial legislation.

Open air treatment of influenza-pneumonia cases has been widely advocated and has been put into practice in Boston in a very efficient way. The State board of health sent out a letter saying that it was so firmly convinced of the

efficiency of the sunshine and open air treatment of influenza-pneumonia cases that it was making use of the press to get quick action in placing the information before city officials. The first effect noticed of this, the so-called Brook's treatment, was that the nurses and doctors did not take the disease. Before this method was adopted the hospitals were all crippled; in one hospital 100 per cent. of the medical and nursing staff succumbed. The patients are put in tents or wooden shacks, and are so placed that sunlight can fall directly on them at some time during each clear day. Air can blow freely over the patient. The expense of tents has made it necessary to use wooden shacks so built that air and sunshine can have free access to the patients, who are kept warm and comfortable, and when put in the fresh air their high fever falls.

The Association

THE QUEBEC MEETING

THE fiftieth annual meeting of the Association will be held in the city of Quebec in June of this year. The exact dates have not yet been chosen, but it is likely that it will take place in the latter part of the third week.

The officers for the meeting are Dr. S. G. Grondin, President-elect, and Dr. A. Vallée, Local Secretary. All the committees have been formed under well-known local men and already much valuable work has been done. It is the intention to try and induce two or more prominent men from overseas to give the addresses in medicine and surgery. The programme of the sections will be largely provided, we hope, by members of our Association, and just here may we request our members to give to the President and his Committee their heartiest co-operation, not only by making this a notable meeting in point of attendance, but also by assisting him in every way to provide a good scientific programme. We hope that the response to letters which will soon go out asking for papers will be a hearty one. It has been the aim of the officers of the Association in the past to secure as many Canadian papers as possible, but we must confess, in the light of experience, that our members have frequently disappointed us, and in order to fill out the programme it has been necessary to go beyond the borders of Canada.

We are sorry to have to state that there will be no special railway rates this year, the reasons assigned by the Passenger Association being conditions brought about by the War, including the abnormal demand on transportation and equipment. This, however, we hope, will not deter our members from attending in large numbers.

The meeting in many respects will be an historical one. It is the fiftieth meeting of the Association since its formation in 1867, two meetings having been missed in 1915 and 1916 owing to the War. The first meeting was held in Quebec just fifty-two years ago, and it seems most fitting that on this, our fiftieth anniversary, we should find ourselves back again in the ancient city.

In the name of the President and his Committee, we can assure our members of a hearty welcome and a profitable meeting.

DR. NORMAN H. BEAL, 1882-1918

Late Professor of Surgery, Western University Medical School

Obituary

DR. NORMAN H. BEAL

Dr. Norman H. Beal, Associate Professor of Surgery at the Western University Medical School, London, Ontario, died at the Mayo Clinic, Rochester, Minn., on October 27th, 1918, from influenza pneumonia at the age of thirty-six. He had barely entered into an arrangement with the Mayo Clinic to become first assistant to Dr. W. J. Mayo in his operative work, when he was seized with this fatal malady.

He graduated from the Western University as Gold Medallist in 1906. After serving a year's internship at Victoria Hospital he spent some time in post-graduate work in the British hospitals. On his return he began practice in London, Ontario, attaching himself as assistant to the chairs of histology and pathology. In 1910 he began teaching in the department of surgery and surgical anatomy. His natural gifts and ceaseless energy made him one of the most popular and instructive surgical teachers in the department. He had taken an active part in the Canadian and Ontario Medical Associations, being a member of the executive of the latter at the time of his death. He was the moving spirit in the establishment of two live medical societies, namely, the Journal Club and the Western Ontario Academy of Medicine.

He had a brilliant future as a surgeon. His attitude towards his surgical problems was that of a research student. He devised an instrument and method of suprapubic bladder drainage which is doubtless the simplest and most efficient known to surgeons. His article on "Abdominal Surgery and Pulmonary Tuberculosis" (Canadian Medical Association Journal, July, 1918), is regarded by surgeons as pioneer work. He is probably the first Canadian surgeon who successfully transfused with blood, before operation, a ruptured ectopic pregnancy. His publications were not numerous but of such merit as to lead to his appointment as an assistant to the Mayo Surgical Clinics.

He had literary and musical tastes, took an active part in the University Literary Society, and was a moving spirit in

the formation of the Musical Art Society. The success of the Child Welfare movement was due in no small measure to his enthusiastic support.

In 1908 he was married to Miss Marian Louise Escott and he leaves a widow and two children to mourn his loss. Our profession lost by his death one with a most brilliant surgical future; the University Alumni lost a loveable companion and a true friend.

DR. A. ORR HASTINGS

Dr. A. Orr Hastings, one of Toronto's leading medical practitioners, and brother of Dr. C. J. O. Hastings, M.O.H., died at his home in the city on November 21st. He lost his wife more than a year ago and the grief and loneliness following her death caused his decline. He practically retired after her death and gradually succumbed to nervous depression.

The late Dr. Hastings was an early graduate of the Toronto University, and finished his course in Europe. He was a post graduate of London and Dublin Universities. In 1886 he returned to Canada. He established a very large practice in Toronto and for thirty years was a familiar figure in his native city, and was universally beloved. He was in his sixty-fourth year.

DR. T. H. BALFE

It was with very great regret that Hamilton received the announcement of the death of Thomas Hugh Balfe, M.D., C.M., one of its most prominent medical practitioners. He was born in Smith's Falls, Ontario, forty-seven years ago. He graduated with distinction at Queen's, Kingston, and, after passing in Arts, he took up Medicine and obtained the degree of M.D., C.M., subsequently taking a post graduate course. Going to Hamilton he at once established a practice in which he became highly successful.

Dr. Balfe had been ailing for several months, and two or three times during the past summer went away for short rests. Recently he had been unusually busy in his practice, and in his weakened condition was unable to withstand the pneumonia that followed an attack of influenza. He leaves a widow and a family of five; one, a son, Thomas, has adopted his father's profession and is attending the Medical School at Toronto University. The death of Dr. Balfe robs Hamilton of one of its sound medical minds.

DR. JAMES F. BOYLE

One of the sad echoes of the great epidemic of influenza which has been sweeping the West reached Toronto lately in the news of the death of Dr. J. F. Boyle. He was a comparatively young man in the prime of life, a son of the late Dr. David Boyle, who for many years was superintendent of the Ontario Museum in Toronto. In 1896 Dr. J. F. Boyle received his degree of M.B. from the University of Toronto. When the south African War broke out, shortly after, he served on one of the British transports, and at the end of the war took up post graduate work, receiving degrees at the Universities of Edinburgh and Glasgow. On his return to Canada he practised for five years in Priceville, Ontario, and since then for eleven years in Edmonton, where his public spirit in the affairs of the city and his disinterestedness and devotion to his duties as a physician, have won him a noble reputation and many friends. Dr. Boyle was an exemplar of the finest traditions of the profession; he fought the epidemic in Edmonton heedless of personal consequences; for weeks he worked among his patients night and day, and when finally attacked by influenza his resistance was so weakened, owing to his wornout condition, that he died. He, too, has paid the supreme sacrifice.

Dr. James Lynds, formerly of Albert County, New Brunswick, died recently at Ann Arbor, of Spanish influenza. He conducted a private hospital there for some years, but recently offered himself for army medical work. Before he could be accepted he was struck down with the prevalent disease. He was a familiar figure in his native county and his untimely death has caused general regret.

Dr. Amos F. Bauman died at Waterloo, November 25th. He was a well-known physician of that town having held an extensive practice there for thirty-three years; for the last ten years he was also the medical health officer. He died after an illness of a year's duration, suffering from heart failure. He leaves a widow and one son. He was a graduate of Trinity University.

Dr. J. C. McCabe, one of Hamilton's best known physicians, died recently after a lengthy illness. He had resided for thirty-four years in the city and built up an extensive practice.

It is with deep regret we record the names of the following

doctors who succumbed to Spanish influenza during the late epidemic; death was frequently caused by devotion to duty.

Dr. W. C. Senerton, Vancouver; Dr. E. K. Henderson, Haliburton, and Dr. James Henderson, Toronto, (brothers); Dr. John Butterwick, Calgary; Dr. Auguste Mathieu, Montreal; Dr. Pierre Lagueux, Levis; Dr. J. L. Barry, Humboldt, Saskatchewan.

Correspondence

KINGSTON, ONTARIO, *November 24th*, 1918

To The Editor,

CANADIAN MEDICAL ASSOCIATION JOURNAL,
Montreal,

Sir:—I have just seen Lieutenant-Colonel Biggar's letter in the November number of the JOURNAL, commenting on my article on "The returned soldier," in the September issue. Apparently this officer has not carefully read the portion of the article dealing with matters affecting the Board of Pensions Commissioners for I nowhere question that "pensions are awarded for disabilities or losses of normal abilities, and not for the injuries or diseases which have caused such loss"; nor that the descriptions upon which pensions are awarded should be stated in clear and unmistakeable language.

The position I took in this article shortly was this: With the guidance of the "Instructions and table of disabilities" issued by the Board of Pensions Commissioners, the members of the Medical Boards who examine the man, and in his presence write the description of his disability, are in a better position to estimate the percentage of disability than are the medical officers of the Pensions Board, who see the written description, but not the man.

The Pensions Board, in the circular quoted in the September issue, take the opposite ground. No one questions the need of sharp supervision of the Medical Board's estimate of disability, and the right to insist that the description should qualify for the percentage estimate given.

I thoroughly believe the Pensions Board are endeavouring to do justice to the returned soldier, but I think this could be better effected by adoption of the position I advocate.

Yours very truly,

W. T. CONNELL

Miscellany

News

MARITIME PROVINCES

By the new Health Act of New Brunswick, which has just been proclaimed by the Lieutenant-Governor, the Hon. Dr. Roberts becomes Minister of Health and Dr. G. C. Melvin chief medical officer. Dr. Abramson is chief of laboratories. The province is divided into three districts, each under a medical officer. The eastern district under Dr. F. J. Desmond; the southern district under Dr. J. F. L. Brown, and the western district under Dr. J. D. Lawson. There is also a further sub-division. Each county in a district will be a sub-district, with its own board of health, appointed partly by the municipality and partly by the government. The boards of St. John, York, and Westmorland will each have five members, each of the other counties will have three. In all cases, except in the city of St. John, the district medical officer will be a member of the sub-district boards, and chairman of all except St. John. These sub-districts deal with three services: public health and sanitation, medical inspection of schools, and vital statistics. Collectors of the latter will be appointed and, to save expense, these may also be health and sanitary inspectors. The organization will be completed by the addition of a child welfare department.

The St. John Board of Health recently submitted a statement of the cost of the smallpox situation a year ago. The sum expended was $14,100.76. This included vaccinations and the care of naval and military patients, as well as the boarding and nursing patients at the Isolation Hospital.

In response to an emergency cable, 10,000 dressings of sphagnum moss were dispatched from St. John for shipment overseas. The cable called for 50,000, and the ladies of St. John in connection with this branch of Red Cross work immediately responded.

Dalhousie University, after having been closed for a month

on account of the outbreak of influenza in Nova Scotia, was re-opened on November 7th. It was then found that the total entry into the Faculty of Medicine was one hundred and seven. The numbers in the Dental Faculty are also very high this year.

A large new military hospital is to be constructed at Sydney; the government, while ready to stand the cost of the hospital itself, desires the city to provide the site. Major Freeman O'Neil, who has lately returned from Ottawa, appeared before the city council with the proposition. All were unanimously in favour of it, and a committee was appointed to co-operate with the government and place matters on a working basis as soon as possible. The annual meeting of the Sydney Anti-tuberculosis Society took place in October. A hundred cases were reported to have been treated by this society and a large number of incipient cases cured. The Hamilton Hospital annual grant was renewed by the town council of North Sydney after some discussion to withdraw it had been heard.

The new Dalton Sanitorium established at Prince Edward Island is nearing completion, and is considered one of the finest convalescent homes in Canada. It will be devoted to the care of invalid soldiers.

QUEBEC

The results of the Medical Council of Canada examinations, which were held at McGill University, the Royal Victoria and Notre Dame Hospitals, Montreal, have been announced from Ottawa. Nine men become duly licensed medical practitioners. The examination carries with it registration on the Canada Medical Register, with the diploma L.M.C.C., which is a qualification accepted by all the provinces as sufficient for license and registration without further examination of any kind.

The Montreal board of health has created a special bureau of Child Hygiene. The energies of the bureau will be devoted to reducing the infant death rate. Analysis of the deaths caused by influenza, pneumonia, and broncho-pneumonia during the month of October showed that the percentage of children who died from these diseases was 22·32 of the total. The total deaths for October were 1,090 for children under five years of age.

At the annual meeting of the Leeds and Grenville Medical Society, the officers elected for the ensuing year were: president, Dr. Featherston, Prescott: vice-president, Dr. Storey, Kemptville; secretary-treasurer, Dr. Kydd, Eastern Hospital, Brockville; executive committee, Dr. Sinclair, Gananoque; Dr. Kerfoot, Prescott; Dr. Robertson, Brockville; Dr. Hamilton, Westport. Very interesting papers were read and one by Dr. Wallace entitled, "Surgical Operations on the Insane and Border Line Cases", attracted marked attention, and in the discussion which followed several points of absorbing interest were developed.

Appointments have been made by the Government to the Board of Railway Commissioners for Canada, due to the expiration of the ten-year terms of office of Dr. S. J. McLean and D. Scott. Dr. McLean has been reappointed and Dr. G. J. Rutherford, of Calgary, has been selected to succeed Mr. Scott.

St. Luke's Hospital has lost the services of A. J. Mulvanny, who is considered by medical authorities to be one of the ablest radiologists in Canada. In this capacity he joined the Canadian expeditionary force to Siberia. Before coming to St. Luke's about six months ago he was in Boston for ten years, serving as radiologist at the Massachusetts General Hospital and the Children's Hospital of Boston.

ONTARIO

The Government of Ontario appointed December 4th for the hearing of deputations from the various bodies interested in the recommendations made by the Commissioner of Medical Education in Ontario, so far as these relate to the classes of persons to be entitled to practice medicine in Ontario, and the definition of "the practice of medicine". Matters affecting the organization and powers of the Medical Council and the recommendations of the Commissioner with regard to optometrists and nurses will be dealt with later. A deputation representative of the dental profession in Ontario interviewed the Hon. Dr. Cody and advanced the generous proposition that if the government will undertake the provision of systemic dental inspection in the provincial public schools, more particularly in the rural districts, the profession stands ready to establish dental clinics in connection with the local hospitals and therein provide free dental attention for children

whose parents may find themselves unable to pay the usual expenses. The Hon. Dr. Cody replied that the importance and practical character of the proposition was fully appreciated, the Department having this identical matter under its consideration already. The only difficulty suggesting itself was one of financing, and this phase of the matter would obtain the early attention of the administration.

One of the important measures to come before the Ontario Legislature will be a medical bill. Several months ago Judge Hodgins presented a report on this subject, after an exhaustive inquiry, and he made certain recommendations upon which the new Act should be based. Sir William Hearst intimated that such a bill is to be introduced and it is hoped to have it become law at the next session. A good deal of debate is anticipated, as there will be strong opposition in certain quarters to some of the proposals for the regulation of the profession.

The University of Toronto, Faculty of Medicine, has closed this year with a record first year, 255 students having registered for first year work, of whom over thirty are women.

The Central Ontario Hospital Association has finally materialized; eight hospitals are represented: Port Hope, Ross Memorial, Lindsay, Bowmanville, Oshawa, Cobourg, Peterborough and Belleville. They were represented by the presidents of their respective boards and the lady superintendents. Mr. John D. Hayden, president of the Cobourg Hospital Board, was elected president of the Association and Dr. Henry of Oshawa, secretary.

President E. E. Braithwaite, of the Western University, has recently called the attention of the board of governors to the necessity of the erection of a new medical school. Fifty new students have been enrolled which brings the total attendance up to about one hundred. This will necessitate the doubling of classes.

Mr. J. A. McLarty of the fifth year, and Mr. C. W. Ironside of the third year of the Western University Medical School, died from pneumonia during the recent epidemic of influenza.

One of the most recent organizations formed for aiding the

suffering is the "Sisters of Service". It was inaugurated on Thanksgiving Day, in the Provincial Parliament Buildings, Toronto. Branches are forming all over Ontario. The Provincial Secretary is its president and the Provincial Health Officer chairman of its executive. The primary purpose of its formation was designed to fight the disease of Spanish influenza during the recent epidemic, but it is to continue the work of aiding the government authorities in the protection of the health of Ontario's people at all times.

BRITISH COLUMBIA

THE report of the proceedings of the first annual convention of the hospitals of British Columbia has just been issued and contains a quantity of highly informative and useful matter. It is so comprehensive that it should be possible for the entire medical and nursing profession in this province to benefit almost as much from a perusal of the bulletin as if they had attended the sessions of the convention. Comprised in the report is the constitution and by-laws of the British Columbia Hospital Association, so that any of the smaller hospitals in the province which were unrepresented at the time, by getting the bulletin, can learn all the requirements of membership, etc. In the election of officers Hon. J. D. Maclean was made honorary president; Dr. M. T. MacEachern, president; 1st vice-president, R. S. Day; 2nd vice-president, Major Gray, of New Westminster; secretary, Mrs. Johnson, Vancouver, and treasurer, Dr. Gatewood, Vancouver.

THE Vancouver Medical Society are planning a state medical service; the president, Dr. J. W. Ford, explains the situation. Medical supervision in the schools and the Workman's Compensation Board have already established a partial state service. In England the idea has been more fully developed in the system by which everyone has an option of joining the state medical service by paying so much from his wages, receiving in return free medical treatment. While any such measures would have to be enacted by the provincial legislature, it would be necessary first to have the main body of medical men in co-operation.

THE Victoria Medical Association held its annual meeting early in November when the election of officers for the ensuing year took place. Dr. A. B. Hudson, the vice-president, was elected to succeed the retiring president, Dr. W. T. Barrett; Major E. H.

Ridewood was elected vice-president. Pressure of military duties necessitated the retirement of Dr. Thomas Miller from the office of secretary to the Association, which he had so long and ably filled, and Dr. E. W. Boak was elected secretary in his stead. It is now finally settled that two concentration hospitals will be established, one on the mainland and the other on Vancouver Island. The former will be somewhere between New Westminster and Vancouver. These two institutions will take all the patients now in the various military hospitals in the whole of British Columbia with the exception of those at special institutions, such as Balfour and Tranquille.

The Provincial Board of Health has just issued, in a report which covers the first six months of the present year, some important vital statistics. The population of the province at the end of 1917 was 382,689, not including some 25,000 Indians. In the first six months of the present year deaths totalled 2,046, and births 4,940, while there were 1,443 marriages. Despite the attention paid to the prevention of tuberculosis, in the six months stated deaths from that disease totalled 236. For the whole of last year the total was 413. If the rate of the first six months of this year is maintained the total for the whole year will show a gain of 14·28 per cent. over 1917. Cancer is another disease which shows an increasing tendency. Last year the total deaths therefrom were 248. In the first six months of this year the total was 144. If this rate is maintained an increase of 16·66 per cent. over 1917 will be recorded. In the death rate from tuberculosis the Oriental population suffered most, the percentage of deaths amounting to 22·49.

ARMY MEDICAL SERVICES

The Distinguished Service Order has been awarded to Major A. L. Lockwood, M.D., for gallantry under fire with the Royal Army Medical Corps. In 1916 Major Lockwood was decorated with the Military Cross for gallantry while acting at an advanced dressing station, and still later won the Mons Star for participating in the early fighting in 1914. His home is in Westport, Ontario, and he is a graduate of McGill University of the class of 1910.

Major Lockwood received a still further honour, being invited as a representative of the Royal Army Medical Corps to read a paper on "Chest Surgery" before the International Con-

gress of Surgeons at Paris. He and Sir John Rose Bradford were the only men to speak before the Chest Section of the Congress.

Captain Donald C. Malcolm, M.D., of St. John, New Brunswick, has been awarded the Military Cross. Captain Malcolm went overseas as medical officer of the 140th Battalion. Previous to his entering military service he had been holding the post of superintendent of the General Public Hospital of St. John.

Captain Finlay Munroe, C.A.M.C., of Glengarry, Ontario, has been awarded the Military Cross for gallantry at Amiens. He went overseas with the 154th Battalion. He graduated in Medicine from McGill University and has been stationed at No. 36 Canadian General Hospital, Boulogne.

The Military Cross has been awarded to James Mossman, C.A.M.C.

The Military Medal has been awarded to J. I. Ferguson and W. Menzies, both of the C.A.M.C.

Nursing Sister Theodora A. McKiel of Fairville, New Brunswick, was decorated by the King on July 17th with the Royal Red Cross. Leaving Canada with the First Contingent she has seen service in Great Britain, France and Salonika, and on returning from eighteen months duty at the latter front was appointed Matron to No. 15 Canadian General Hospital.

Dr. A. G. Nicholls, Professor of Pathology and Bacteriology in Dalhousie University, who has been for the past three years Fortress Sanitary Officer at Halifax, with charge of the District Laboratory of Hygiene, has been appointed D.A.D.M.S. (Sanitation), M.D. No. 6, with rank of major.

Six Medical Boards have been employed at the Exhibition Camp, an average of 120 men being examined every day. Major G. G. Mitchell, G.S.O., has been appointed to co-operate with the department of the A.A.G. at Headquarters to hasten the process of demobilization. It is the policy of the district authorities to utilize all able-bodied Category "A" draftees in the Army Medical Corps in the other branches of the Service where they may be required. University students in the Army Medical and Dental

Corps, anxious to resume their studies, will be discharged immediately.

Dr. Boyd, representative of the Invalided Soldiers' Commission for Medicine Hat district, has received instructions from Ottawa to the effect that owing to the prevalence of influenza which is epidemic, the department will undertake the care and treatment of all ex-soldiers who are suffering from influenza. These men are taken on the strength only for care and treatment and not for pay and allowance except in those cases where the war disability is responsible for their condition. This would include asthmatic, bronchitis, and gas cases particularly.

The King paid a special visit to the Canadian Hospital at Doullens, during his recent visit to France. It had been deliberately bombed by the Germans a few months before. The King listened to the story of the outrage, which was related by the commanding officer, and as he was leaving he paid a special tribute to the nursing sisters and doctors, saying: "By continuing your work of mercy after such a terrible experience you have set an example to the whole world."

Appointments:

Captain Edward Liversay is appointed Adjutant at the Ogden Military Convalescent Hospital. Captain Robert John Kee is detailed for duty under the A.D.M.S., M.D. No. 2. Honorary Captain Lorne Campbell Johnstone is posted for duty in the District Paymaster's Office, M.D. No. 10. Captain William Arthur Harvie is posted for duty at the Regina Military Hospital. Major John William Hutchinson is posted for duty at the D.G.M.S. Office, Ottawa. Lieutenant-Colonel Lewis Wentworth Irving, D.S.O., is detailed as A.D.M.S., M.D. No. 2, with the rank of Colonel. Major Keith Forrester Rogers is posted for duty at the Military School of Orthopædic Surgery and Physiotherapy, Hart House, Toronto. Captain Seymour Traynor is posted for duty at the Ste. Anne de Belleville Military Hospital.

The following officers have been selected to serve in the Overseas Military Forces of Canada: Captains A. J. Randall, L. D. Buck, C. D. Hamilton, M. J. Kennedy, E. L. Pennock, M. P. Smith, H. H. Cheney, E. A. Greenspon, A. B. Illievitz, J. H. F. Malone, D. Nathan, H. S. Tait, E. B. Peake, D. W. Morreson, W. L. Luton, H. C. Watson, J. A. Locke, J. A. McPhee. Lieuten-

ants S. J. W. Horne, R. H. Lalonde, F. B. Sharp, S. F. Tichborne, G. A. Cheeseman, R. Fontaine, A. H. Greenwood, A. M. Lightstone, W. McL. McLeod, C. E. H. Tuchy, J. E. Wadsworth, L. Robert, J. M. Donnelly, W. S. Quint, T. D. A. McGregor, J. E. Pritchard, D. A. McAulay, E. Wershof, W. E. Munro, H. J. Robillard, I. Y. Patrick.

Major George May Foster is posted as officer in command, medicine Military Hospital, Quebec.

Lieutenant-Colonel Thomas Albert Starkey appointed consultant in Sanitation for M.D. Nos. 4, 5, 6, and 7.

Major Malcolm M. Crawford posted as Registrar St. Andrew's Military Hospital from the office of the D.G.M.S., Ottawa.

Promotions:

To be Lieutenant-Colonel: Captain Arthur Stirling Gorrell.

To be Temporary Majors, O.M.F.C.: Captains D. B. Kennedy, M.C., J. A. Briggs, H. Hart, M.C.

To be Acting Majors, O.M.F.C.: Captains H. M. Barrett, F. W. Lees, M.C., E. Douglas, M.C., L. C. Palmer.

Temporary Lieutenant-Colonel W. T. M. MacKinnon to be Acting Colonel while commanding a special hospital.

To be Captains: Lieutenants Austin F. Gillis, Eldon Douglas Coutts, John McDonald, Harvey Elgin Hicks, John Jennings Watts.

Returned from Overseas (Officers):

Lieutenant-Colonel G. Royce, Lieutenant-Colonel A. T. Bazin; Major G. H. Foster; Captains C. F. Magee, George R. Baby, Kenneth Lorne MacKinnon, R. H. Arthur, W. H. Cochran, D. M. Lineham, M. D. McEwen, T. R. Ponton, Alexander Robert Munroe, W. H. Taylor, R. V. McCarley, W. E. Guest, C. T. McCallum, R. Henderson, John Joseph Cawthra, C. B. Waite, A. D. Irvine, H. B. Logie; Acting Major J. E. Campbell, Daniel Wade Davis, W. Curtis.

CASUALTIES

Died of Wounds:

Dr. Harry Dunlop, C.A.M.C., Kingston.
J. B. Hanway, C.A.M.C., Truro, Nova Scotia.

Died on Active Service:

A. Samuel, C.A.M.C., St. John, New Brunswick.
H. Pitman, C.A.M.C., England.

Wounded:

W. Hadden, C.A.M.C., Winnipeg.
J. Burke, C.A.M.C., River Bourgeoise, Nova Scotia.
A. Warner, C.A.M.C., England.
S. Cahille, C.A.M.C., Sydney, Nova Scotia.
J. A. Cooper, C.A.M.C., Souris, Manitoba.
W. R. Copp, C.A.M.C., Blythe, Ontario.
J. H. Daniel, C.A.M.C., Brantford, Ontario.
J. Crowther, C.A.M.C., Calgary.
C. R. Deburgh, C.A.M.C., England.
A. Millen, C.A.M.C., England.

Book Reviews

Clinical Case-Taking. An Introduction to Elementary Clinical Medicine. By Robert D. Keith, M.A., M.D., formerly principal of the King Edward VII. Medical School, Singapore. 96 pages. Price 3/6 net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C.

This small manual was written for the students of King Edward VII. Medical School, Singapore; on this account it contains reference to tropical diseases and their clinical laboratory findings, which do not appear in those manuals used by us.

It is a simple summary of methods generally recognized and covers only the ground it claims in its title, an introduction to elementary clinical medicine.

Lessons From The Enemy. How Germany Cares For Her War Disabled. By John R. McDill, M.D., F.A.C.S., major, medical reserve corps, U. S. Army. Price, $1.50. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

This is the fifth of a series of Medical War Manuals issued by Lea and Febiger under the supervision of the Surgeon-General, U.S.A.

The author made his observations while director of an Ameri-

can hospital unit in Germany in 1916. He was given every facility for his study of the sanitary (including medical and surgical) organizations of the German army. The little volume includes chapters on volunteer nursing and welfare work under the Red Cross, re-education and orthopædic hospitals and workshops, and hospital systems in peace.

It is a capital little manual and will well repay careful perusal by every army medical officer. It is well illustrated.

Laboratory Methods of The United States Army. Compiled by the Division of Infectious Diseases and Laboratories office of the Surgeon-General, War Department, Washington. Price, $1.50. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

This volume, the sixth of the series of War Manuals issued by Lea & Febiger, requires no review. It is authorized by the Surgeon-General, U.S.A., and compiled by the division of Infectious Diseases and Laboratories. It contains both quantitative and qualitative analytical methods, covers collection and shipping of specimens, preparation of solutions and stains, analytical and bacterological methods, with examination of milk, water supplies and sewage. A valuable manual both for the army man and the civilian laboratory worker.

Medical Service at The Front. By Lieutenant-Colonel John McCombe, C.A.M.C., and Captain A. F. Menzies, M.C., C.A.M.C. Price, $1.25. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

This little manual written by Canadians, dedicated to the Canadian Premier, and with its foreword by the D.G.M.S., Canada, is one which should be read by all who wish to be conversant with the medical service and its arrangements for the care of the sick and wounded at the front.

A short but succinct account is given of the disposition of the army in the field, and thus the linking of the combatant and medical service is made more clear. The authors are to be congratulated upon the mass of information they have managed to compress into such small but very readable compass.

Medical Societies

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Annual Meeting, Calgary, 1919.

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MEDICAL SOCIETY OF NOVA SCOTIA:—President—S. H. Murphy, Halifax. Secretary-treasurer—Dr. J. R. Corston, Halifax. Annual Meeting, Antigonishe, 1919.

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Annual Meeting, St. Stephen, 2nd Friday in July, 1919.

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ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

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SASKATCHEWAN ANTI-TUBERCULOSIS LEAGUE—President—Mr. A. B. Cook. Hon.-Secretary—Dr. M. M. Seymour, Commissioner of Health, Regina.

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A CLINICAL STUDY OF FOUR HUNDRED PATIENTS WITH BRONCHIAL ASTHMA

By I. Chandler Walker, M.D.

Boston, Mass.

MY aim in this paper is to present as many useful facts as possible in the determination of the cause and the treatment of bronchial asthma. These facts, which have been obtained from a study of four hundred patients with bronchial asthma, may all be used to advantage by you in general practice.

The cases were about equally divided between the two sexes; there were one hundred and ninety-eight males and two hundred and two females in the series. The nationality of the patient played no part in the cause or the frequency of the disease; so-called neurotic races, as for instance the Jewish race, were no more prone to asthma than other nationalities. Occupation, as a rule, played no part in the cause or frequency of asthma, however, occasionally occupation did have a bearing upon the cause of asthma. For instance bakers frequently have bronchial asthma from the inhalation of the flour with which they work. Two unusual instances where occupation bore a direct relationship to the cause of asthma are sufficiently interesting to mention. A man whose work consisted of sifting green coffee beans became sensitized to the protein in the green husks and had asthma from the protein. Another man whose work was that of a jewel polisher became sensitized to the protein in the dust from the boxwood with which he polished the jewels. An enquiry also should be made always in regard to the presence of pet and domestic animals at the patient's home, and where he works.

Read at the Hamilton Meeting, May 30th, 1918.

The mode of onset of asthma or the symptoms preceeding asthma have little bearing upon the cause since, in the majority of cases, the onset is with what the patient calls a cold or bronchitis. Frequently these colds and attacks of bronchitis are not such in the sense of a disease or an infection but instead they are the first symptoms of sensitization to some protein, and months may elapse before the physician realizes that the patient has asthma, and the association of eczema with bronchitis and asthma is of considerable importance since such patients are frequently sensitive to some type of protein, the younger the patient is when these conditions manifest themselves the more probable it is that the patient is sensitive to some food protein. This is especially true in infancy.

The time of the year at which the patient began to have asthma and the season of the year, if it always limits the attack of asthma, is important. Attacks of asthma which occur only during the summer months are usually caused by the protein in the pollen of plants. In many instances this summer type of pollen asthma is prolonged throughout the year by bacteria which, because of the patient's lowered resistance, cause a bronchitis and this in turn causes asthma. In a few instances, the early type of summer asthma is due to bacteria rather than to pollens. A number of patients have asthma only in the early spring (March and April) and in the late fall (October and November) and these patients associate asthma with the changeable weather; in such cases bacteria are frequently the cause. Some patients have asthma only in the winter months when the air is clear and cold and bacteria are again the cause.

The length of time that a patient has had asthma is important since one must bear in mind that the longer one has asthma the more pronounced may be the resultant bronchitis and emphysema so that the asthma may not be relieved by removing the offending cause but the bronchitis must also be treated. The age of onset of asthma is most important, but before we go into this we must define sensitization and outline the methods of testing a patient to determine whether he is sensitive or not.

When a person is sensitive or anaphylactic to a particular substance, ill effects or certain symptoms are produced in that person by the entrance of that substance into his body. One type of ill effect or symptom is an attack of bronchial asthma. We also know that it is the protein element in that substance that causes asthma, and we must not lose sight of the fact that proteins are most widely distributed in nature. Therefore pa-

tients may be sensitive or anaphylactic to proteins and if so these proteins may be the cause of bronchial asthma. Proteins enter the body by inhalation, by ingestion, by absorption and by infection. Inhalation takes place through the respiratory tract and chiefly concerns the protein in the pollen of plants, in the emanations and hair of animals, in the flour of cereal grains and in some kinds of dust. Ingestion has to do with the protein in food and we know that foods after entrance into the gastro-intestinal tract do cause asthma. Absorption apart from inhalation and ingestion concerns the conjunctives and to a less extent the skin. By infection we mean the presence of pathogenic bacteria in any part of the body but more especially foci of infection located in the teeth, tonsils, nose, throat and lungs. In the case of bacteria we have to deal with the protein element as well as with the infectious element.

There are several ways of testing a patient in order to determine whether or not he may be sensitive to proteins. One commonly used method is known as the intradermal test which in our experience has proven to be too sensitive and too delicate if not erratic. The test which has proven to be safe and reliable as regards hay fever and asthma is the skin or cutaneous test which is performed as follows: A number of small cuts, each about one eighth of an inch long, are made on the flexor surfaces of the forearm. These cuts are made with a sharp scalpel, but are not deep enough to draw blood, although they do penetrate the skin. On each cut is placed a protein and to it is added a drop of tenth-normal sodium hydroxide solution to dissolve the protein and to permit of its rapid absorption. At the end of a half hour the proteins are washed off and the reactions are noted, always comparing the inoculated cuts with normal controls on which no protein was placed. A positive reaction consists of a raised white elevation or urticarial wheal surrounding the cut. The smallest reaction that we call positive must measure 0·5 cm. in diameter and any smaller reactions are called doubtful. Negative skin tests with proteins rule out those proteins as a cause of asthma and all proteins which give a positive skin test should be suspected as a cause of asthma. In the case of bacteria, however, the skin test has to do only with the protein element, so that even though bacteria give a negative test they may still be a cause of asthma through their infectious nature and the patient need not be sensitized to bacterial protein.

Of the four hundred cases studied, one hundred and ninety-one or 48 per cent. gave a positive skin test and were therefore

sensitive to some protein. According to sex, 53 per cent. of the sensitive cases were males and 47 per cent. were females, and of the total number of males studied, 51 per cent. were sensitive, and of the total number of females, 44 per cent. were sensitive. Therefore, although the prevalence of asthma between the two sexes was about equally divided, the percentage of sensitive cases was a little higher among the males than among the females. While considering the above percentages of sensitive cases it should be borne in mind that doubtful and slightly positive skin tests are not being counted; only those reactions which were a distinct urticarial wheal measuring 0·5 cm. or more in diameter are included, so that the number of sensitive cases is computed on a very conservative basis.

The following table is presented in order to show the importance of the age of onset of bronchial asthma. In the first column the age of the patient is divided into five year periods with the exception of the first five years of life, which is subdivided into two periods, namely under two years of age which corresponds to infancy, and between the ages of two and five. Other columns, by following across the page on a line with the age of onset, show respectively the number of cases, the percentage of cases, the number of sensitive cases, the percentage of sensitive cases, and the number of cases sensitive to the proteins which are found in the four principal sources, namely, animal hair, food, bacteria and pollens at that particular age of onset of asthma.

Age of onset of asthma	Number of cases	Per cent. of cases	Number sensitive	Per cent. sensitive	No. sensitive to protein in			
					Animal hair	Food	Bacteria	Pollen
Under 2 years	34	9	28	83	19	23	5	15
Between 2 and 5	30	7·5	27	90	14	9	2	6
" 5 " 10	37	9	15	40	12	5	2	15
" 10 " 15	35	9	24	70	6	5	5	13
" 15 " 20	26	6·5	14	54	8	5	2	5
" 20 " 25	42	10	22	52	6	7	2	12
" 25 " 30	35	9	17	49	7	1	5	9
" 30 " 35	43	10	21	49	3	4	5	9
" 35 " 40	52	13	12	23	2	5	4	3
" 40 " 45	37	9	9	24	1	4	1	3
" 45 " 50	9	2·2	2	22	0	0	0	2
" 50 " 55	11	2·7	0	0	0	0	0	0
" 55 " 60	6	1·5	0	0	0	0	0	0
Over 60	3	0·7	0	0	0	0	0	0
Total	400		191	48	78	68	33	92

It is noted that about the same number of patients had their first attack of asthma at each period of years with the exception that after the age of forty-five there was a great decrease and after the age of sixty there were only three cases; it may be surprising to know that the number of cases who developed asthma under the age of two and between the ages of two and five was as great as at any other age. The relationship between the age of onset of asthma and the sensitization of the individual is important. Of the patients who began to have asthma under the age of two, 83 per cent. were sensitive to some protein; of those whose onset was between two and five, 90 per cent. were sensitive; of those beginning asthma between five and ten, 40 per cent. were sensitive; of those between ten and fifteen, 70 per cent. were sensitive; of those having onset of asthma during the succeeding five year periods between the ages of fifteen and thirty-five, 52 per cent. were sensitive for each period; between the ages of thirty-five and fifty only 23 per cent. were sensitive; and after the age of fifty no patients were sensitive. The above statements may be summarized as follows: 83 per cent. of the patients who began to have asthma during infancy (under the age of two) were sensitive, during childhood or between the ages of two and fifteen, 66 per cent. were sensitive; during young adult life or between the ages of fifteen and thirty-five, 52 per cent. were sensitive, during middle life or between the ages of thirty-five and fifty, 23 per cent. were sensitive and none were sensitive when the age of onset of asthma was after fifty. Stated briefly, four fifths of the patients who began asthma during infancy were sensitive, two-thirds who began during childhood were sensitive; one half of those beginning asthma during young adult life were sensitive, one fourth of those beginning asthma during adult life were sensitive and none were sensitive that began asthma after the age of fifty; as the age of onset of asthma increases, the frequency of sensitization decreases and the knowledge of this is a great help in practice.

The relationship between the age of onset of asthma and sensitization to different types of protein is also very important. In the table, it is noted that nineteen patients, who began to have asthma under the age of two, were sensitive to animal hair proteins; of this number, ten were sensitive to the proteins of horse hair alone, one to cat hair alone and the other eight patients were sensitive to the proteins of the hair of horse, cat and dog although they were more sensitive to the hair of horse than to the hair of the cat or dog. Of the patients whose onset of asthma was be-

tween the ages of two and five and between five and ten, fourteen and twelve patients respectively were sensitive to the proteins of animal hair and in each instance eight of these patients were sensitive to horse hair proteins. Succeeding ages of onset of asthma show a gradual decrease in the number who were sensitive to animal hair protein. Sensitization to food proteins was by far most frequent among those patients who began to have asthma during infancy. Of the twenty-three patients, nine were sensitive to egg protein, eight to the cereal grains, and three to milk. Of the nine patients who began asthma between the ages of two and five and who were sensitive to food proteins, two were sensitive to egg and five to cereal grain proteins. Succeeding ages of onset of asthma show about a constant average of frequency in the sensitization to foods, but the frequency of sensitization to egg, milk, and cereals is much less than for other food proteins such as fish, meat and potato.

The frequency of sensitization to the bacterial proteins was about the same for all ages up to forty years. More patients were sensitive to the protein of staphylococcus pyogenes aureus than to any other type of bacterial protein, however, sensitization to the protein of staphylococcus pyogenes albus and the various streptococci was sufficiently frequent to warrant routine tests with these. In the above table the number of positive reactions with bacterial proteins is too conservative since many definitely positive reactions which do not measure 0·5 cm. in diameter are obtained.

It is of interest to note the effect of occupation on sensitization after the age of forty. Of the eleven patients who became sensitive to proteins after the age of forty, four were bakers and were sensitive to wheat protein, one was a hostler and was sensitive to horse dandruff protein, and another who was a sifter of green coffee beans was sensitive to green coffee protein; therefore in over half of these cases occupation was responsible for the cause of asthma.

In the table it is noted that seventy-eight patients were sensitive to the protein derived from animal hair. Of this number, forty-three were sensitive to horse hair alone, five to cat hair alone, three to feathers alone, two to cattle hair alone, one to wool alone; the remaining twenty-four patients were all sensitive to horse hair in combination with either dog hair or some of the other types of hair. Therefore of animal emanations, the protein of horse hair is by far the most frequent cause of asthma, and the hair of the dog is the least frequent cause of asthma.

Of the sixty-eight patients who were sensitive to the food proteins, thirty-five were sensitive to the cereal grains and of these thirty-five, twenty-five were sensitive to wheat alone, three to corn alone, two to rice alone and the remaining five patients were sensitive to all of the cereal grains. Among the thirty-three remaining food cases, thirteen were sensitive to egg, five to casein, eight to fish, and seven to potato; an occasional patient who was sensitive to one of these types of proteins was also sensitive to some other food protein such as beef, chicken, or spinach, but sensitization to foods, other than those already mentioned, was unusual. Therefore one half of the food cases were sensitive to the proteins of the cereals and wheat was by far the most common food to cause asthma; next to wheat in frequency came egg, then fish, potato and casein were close thirds, and other foods were too infrequent to be enumerated.

Of the ninety-two patients who were sensitive to pollens, seventeen were sensitive to the early pollens and timothy was the chief one of these, forty-five were sensitive to the late pollen and ragweed was the chief one of these, and the remaining thirty patients were sensitive to both early and late pollens. Sensitization to rose, red top, daisy and golden rod was infrequent.

There is one more important point which the above table illustrates, namely, multiple sensitization or sensitization to more than one type of protein. For instance, if we add together the number of cases who were sensitive to horse hair, food, bacteria and pollens we have a total of two hundred and seventy-two sensitive patients, whereas, in reality, there were only one hundred and ninety-one sensitive patients in the series. In other words, some of the patients were sensitive to more than one type of protein. On consulting the table it is noted that multiple sensitization is by far most frequent among those patients who began to have asthma during infancy, that it is quite frequent among those beginning asthma between the ages of two and five, and five and ten, but after these ages multiple sensitization is not very usual. Since the majority of the patients in this series were young adults or older when tested, it is fair to assume that the longer a sensitive patient has asthma the more apt he is to be sensitive to more than one type of protein, and sensititization to one protein early in life is apt to be followed by sensitization to other proteins early in life; and vice versa non-sensitization early in life is not so apt to be followed by sensitization later on. Among the few infants which were tested in this series multiple sensitization was frequent.

A positive skin test with several different proteins may mean that all of them are causing asthma or that only some of them are causing asthma, at present and that the others have been or may be in the future the cause; or even it may mean that none of the proteins are at present the cause, but that they have been and now secondary infection is the chief cause of asthma. Treatment will naturally reveal the present cause. Suffice it to say that positive skin tests by proteins, which seem to have no bearing on the cause of asthma, should be considered as danger signals and not as false reactions; such positive tests should not be disregarded.

The treatment of sensitive cases is largely a matter of judgment in deciding which positive test should be first investigated. If the patient is sensitive to food proteins, such foods should be omitted from the patient's diet for at least a month in order to see what effect they have on the asthmatic condition. In this series of cases nearly all such patients have been relieved of asthma. In a few instances, however, because of the associated bronchitis, autogenous sputum vaccines have been required in conjunction with the restricted diet. Attempts to desensitize the patient against offending food protein by the subcutaneous injection of, or by feeding gradually increasing amounts of the protein, have failed. We have reasons, however, for believing that total abstinence from the offending protein for a long interval automatically desensitizes the patient for that portein.

Patients who are sensitive to bacterial proteins may be successfully desensitized against such by treatment with vaccines of those organisms, but great care must be exercised not to give too large and too rapid an increase in the amount of vaccine. The first dose of vaccine should not be larger than one hundred million bacteria and each succeeding dose should not be more than fifty million over the preceding dose.

Before treatment is undertaken for those patients who are sensitive to the protein of horse dandruff or hair and of pollens, skin tests must be done using various dilutions of these proteins. Treatment should be begun with the dilution next higher than that which gave a positive test; the first dose should be small, usually 0.1 c.c. and each succeeding dose should not be more than 0.1 c.c. over the preceding one. These treatments may be given at five day or seven day intervals. The treatment of patients who are sensitive to hair proteins with the serum of the animal is of no avail and is very dangerous. Patients who are sensitive

to pollen proteins should be treated in anticipation of the season. Occasionally it is necessary to use vaccines in conjunction with the animal hair proteins in order to benefit the associated bronchitis but usually this is not the case.

Those patients who show multiple sensitization, that is those who give positive skin tests with many different types of proteins, are the most troublesome to treat; in such cases treatment is a matter of judgement. Not an unusual case is one who gives positive skin tests with the proteins of wheat, horse hair, and pollens. Naturally wheat should be omitted from the diet any way and, if the patient is exposed to horses, treatment should be given with the horse hair proteins; in fact such treatment is advisable since the patient may be at any time so exposed, and in anticipation of the pollen season the patient should be desensitized against these. Thus all possible known causes will be eliminated. Even then autogenous sputum vaccines may be required.

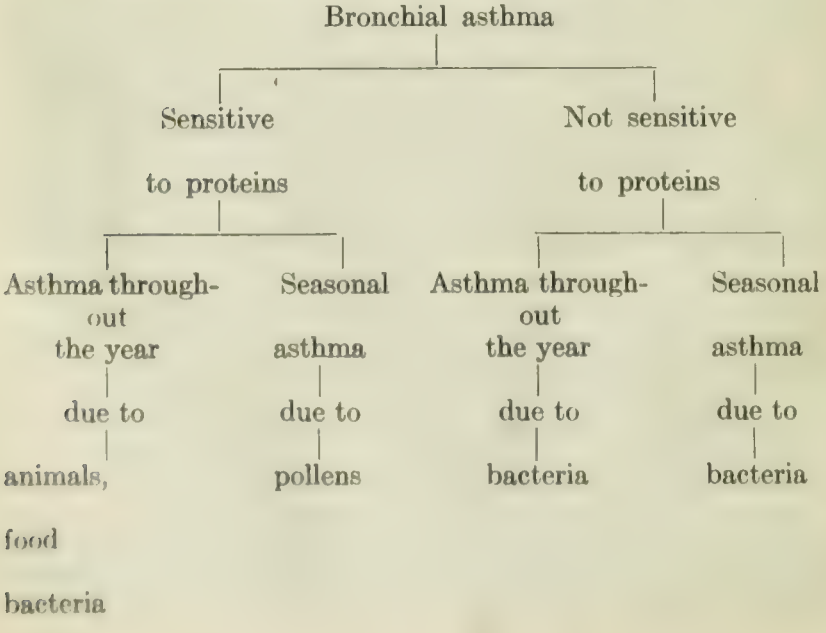
The results of dieting in those sensitized to food proteins and the results of treatment with animal hair, pollen and bacterial proteins, in those so sensitized have been most successful. And in those patients who have not been relieved by such treatment, autogenous vaccines have been of much benefit. The permanency of relief depends upon the amount of treatment and the patient's power of resistance.

The non-sensitive patient, or those who fail to give positive skin tests with proteins, may be disposed of in a few words since there is little to guide us in the cause and treatment of asthma. Occasionally the serum of such patients positively agglutinates some type of organism and treatment with vaccines of that organism frequently benefits their asthma. The non-sensitive patient usually presents the symptoms and physical signs of bronchitis, he gives a history of persistent cough between attacks, and there are râles in the lungs between attacks. Often these patients are relieved or greatly benefited by autogenous vaccines consisting of the predominating organism in their sputum. These vaccines are prepared as follows: thick sputum which is raised after a paroxysm of coughing is washed repeatedly in sterile normal saline and a portion is streaked on large surfaces of plain agar, and another portion is shaken and macerated in dextrose bouillon from which tubes of blood agar are inoculated and plated. The plain agar facilitates the identification of some organisms and the blood agar identifies the various types of streptococci. The most satisfactory results follow treatment with the predominating or-

ganism. The largest number of patients have been relieved by vaccines of staphylococcus pyogenes aureus, streptococcus hemolysans and diphtheroid organisms, when these have been the predominating ones isolated from the sputum. Other organisms may predominate and cause asthma. For instance, one patient has been relieved by an atypical type II pneumococcus, another by Friedlander's bacillus, a few by an unidentified Gram negative staining bacillus, a few by staphylococus pyogenes albus and by streptococcus viridans; in each instance the predominating organism was the one used. Occasionally patients are troubled more from a catarrhal condition of the nose and throat than from cough, and in such cases it is often necessary to use vaccines made from these sources of infection. Naturally the teeth, tonsils and sinuses may be the seat of infection, and such foci, if present, should be attended to. In general, however, we are inclined to be very conservative in regard to operations as a relief for asthma and the possibility of sensitization to proteins should first be ruled out.

We feel that the following is a good and useful classification to use in determining the cause and treatment of bronchial asthma.

Classification Of Causes Of Bronchial Asthma


Bronchial asthma
Sensitive to proteins
Not sensitive to proteins
Asthma throughout the year due to animals, food bacteria
Seasonal asthma due to pollens
Asthma throughout the year due to bacteria
Seasonal asthma due to bacteria

After what has been noted in this paper the above classification needs no description. Although neurasthenic, neurotic, and psychoneurotic conditions are frequently associated with bronchial asthma, we feel that these conditions are not sufficiently often a cause of asthma to warrant a place among causes of asthma. Furthermore no provision is made for so-called cardiac and renal asthma since we do not accept shortness of breath on exertion, nocturnal dyspnœa, and bronchitis, all of which are associated with cardiac and renal disease, as bronchial asthma. The combination of all these symptoms do in a way simulate bronchial asthma, but for such a syndrome we feel that the term asthmatic bronchitis is more appropriate; such a term would infer bronchitis with asthmatic symptoms and this is really the true condition present. Cardiac and renal patients may have true bronchial asthma, however, but in these cases the asthmatic condition is entirely separate from the cardiac and renal disease; they are two distinct conditions not dependant upon each other.

THERE are about a thousand lepers in the United States. Experts of the Rockefeller Foundation estimate that there are 2,000,000 lepers in the world. In the leper colony of Louisiana there are 110 native born Americans among the patients. In Molakai, Father Damien's successor has lived thirty years without a trace of leprosy. Through the new treatment by which chaulmoogra oil is now given, patients have so far recovered that they have appeared to have no trace of leprosy for two years—which may be a step towards a real cure. At the largest leper colony in the world, Culion in the Philippine Islands, there are now 5,000 lepers. At one time there were 9,000; segregation has reduced the number to this extent.

SOME ASPECTS OF MILITARY OPHTHALMOLOGY

By Colonel S. Hanford, McKee, C.M.G.

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IT would be quite impossible in a paper of this kind to go over many important parts of this branch of military medicine, let alone the whole field. I have taken the title advisedly, knowing full well there are many sides of this subject which I shall not be able to bring to your notice. In fact, I have had to be content with presenting to you certain views on military ophthalmology which seemed to me of more than ordinary medical interest.

Military differs widely from civilian ophthalmology and varies in a wide degree, as one is at work in training camp, at the base, or in one of the various parts of the various fields. It was my privilege to undertake military duty on the day following the declaration of war, and, apart from three months' illness, I have been constantly engaged in that duty. These notes are the result of observations during that period, first in Canada, later in France, then on the island of Lemnos, and latterly at a base hospital devoted entirely to the diseases of the eye, ear, nose, and throat.

One of my first impressions at camp was how essential it was to have in a military hospital unit some one with a special knowledge of ophthalmology. One's first duty, the examination and classification of recruits, very definitely demonstrated this: "The standard of vision" has passed through many vicissitudes. When the war began it was as follows:

(*a*) If a recruit can read 6/24 or better with each eye without glasses he will be considered fit.

(*b*) If he can read 6/24 at the same distance without glasses with the right eye, and not less than 6/60 with the other eye without glasses he will be considered fit.

(*c*) If he can read 6/24 fit the above distance with the left and not less than 6/60 with the right eye without glasses he will

Read at the Oxford Ophthalmological Congress, July 12th, 1918.

be considered fit for the A.S.C., A.M.C., A.O.C., and for drivers for the R.A. and R.E.

The standard which specified 6/24 in each eye was not a high one, and was a low standard compared to other continental armies. The result was that many men of this vision had their training practically completed except musketry. This they were not able to pass at any distance beyond two hundred yards.

This standard of vision was later modified to:

(*a*) If a man's vision is 6/24 in one eye without glasses and his right eye can be brought up to 6/12 with glasses he shall be considered fit for category "A".

Though the general principles regarding standard of vision may be fixed, there are many reasons why a definite standard of vision required must be altered from time to time. Comparison of methods during the South African and the present war will suffice to illustrate this. In a report of the committee appointed by the Council of the Ophthalmological Society the following is found:

"The general principles which should be taken into consideration in fixing a standard of vision for enlistment into the army are as follows:

"1. That a man's united sight should be sufficient to enable him to find his way about in bright and dim lights and be such as will prevent him from being a danger to his fellows.

"2. That he should not suffer from any progressive disease of the eye, or one likely to recur.

"These two general principles apply to all branches of the service, combatant and non-combatant."

This is indeed a generous basis to work from. Personally, I feel a standard of vision without glasses should be insisted upon, for I believe that a recruit with 6/24 vision in the right eye is a more useful soldier than a recruit with 6/12 vision with glasses in the right eye. My experience after four years is, that the man with 6/24 vision without glasses is much to be preferred.

The examination which consists only of sight testing must prove unsatisfactory. The soldier should always have a good field of vision in each eye, and his eyes should be practically free from disease. We demand that the right eye must be the good one. The general objection given for not allowing shooting from the left shoulder is the difficulty in teaching the recruit to get the necessary "rounds" per minute and that in the trenches men firing from the left shoulder are more or less of a nuisance to the

right shoulder shots. Whilst conditions are bound to change, standards of vision that have been latterly adopted seem to me fairly satisfactory. I would certainly recommend no further lowering of the standard. For it is to be remembered that one has to consider not only vision by day, but bear in mind the importance of vision by night. Sentry duty at night is of course one of the most important duties of the soldier. There are in the service men with less than the standard vision, men who are not even fit for home guard duty, passed from one service to another, and from one hospital to another in an extremely vicious circle, no one evidently with the courage, or whatever is required, to say that this man is useless in the army, get him back to civilian duty. It is so simple to pass a recruit not up to the standard, but it is exceedingly difficult to get the army rid of this man, be he as useless as possible. Lowering the standard and enlisting men who fall below the prescribed standard, does no good in the way of helping national defence. On the other hand, it does a great deal of harm, as a useless individual in the army is much more of a nuisance and does more harm than a useless individual in civilian life. The question of standard of vision is by no means a simple one, for no matter what actual standard is demanded there will always be found men with that standard who are unfit and men below the standard who are fit. So much depends upon the individual whether he is "keen" or not. I consider a soldier who is anxious to do his duty and has only 6/24 vision in each eye, infinitely more useful and a better soldier in every respect than the disgruntled one with 6/6 in each eye. There is also a certain proportion with mental amblyopia, among whom the amount of vision is not much of an indication of their usefulness. The military point of view should teach a medical officer "to size up" his patient and considerable latitude should be allowed to the military ophthalmologist as to who "sees to shoot" and who "sees enough for ordinary purposes".

There has been a demand for not one but for many standards of vision, as a standard of vision compatible with efficiency in one branch of the service would be absurd if applied to another. This perhaps is true, the drawback to it, however, is what actually happens, and that is, that a man with vision compatible with efficient service in one branch is transferred to another where his vision makes him inefficient and perhaps a nuisance. Men are constantly changed from one service to another, and in cases of great emergency, such as have occurred in the not distant past, even

non-combatant units have been called upon constantly to take up combatant duty. It has been suggested that it is easy to adopt a high standard of vision and to reject without further enquiry all recruits who fail to reach it. It is, as a matter of fact, not so easy as it may seem, I only wish it were, for, if the standard of vision had been adhered to, I feel sure millions would have been saved to this country. Lowering the standard of vision will increase the number of passed recruits marked "fit for service", but it will not increase the number of bayonets, and it will very materially lower the efficiency of the army. Anyone who believes it is easy to adopt a standard and reject all recruits who fail to reach it, please note the following few cases taken here and there from hundreds:

Pte. P. H.—Right vision, 6/36 not improved. Left vision, 6/60 not improved. Diminution of vision due to amblyopia from a high degree of astigmatism.

Pte. W. C. W.—Right vision, 6/60. Left vision, 4 to 8 feet vision.

Pte. R. R. H.—Right vision, fingers at two feet. Left vision, 6/60. Astigmatism and amblyopia.

Sgt. F.—Right vision, 6/60. Left vision, 6/36. 5 diopters astigmatism right eye and 4·5 in the left.

Pte. A. B.—Right vision, 3/60. Left vision, 3/60.

Pte. G. B.—Right vision, no perception of light. Left vision, 6/36.

Pte. A. W.—Right vision, perception of light. Left vision, perception of light. Myopia 25 to 30 diopters.

Pte. H.—Right vision, 6/36. Left vision, 6/24. Amblyopia from astigmatism. This man has been under military pay for eight months.

Pre. B.—Right vision, 6/36. Left vision, 6/36. Convergent strabismus, nystagmus.

Pte. T.—Right vision, 6/36. Left vision, 6/36. This man was removed from the ranges as dangerous. One can well imagine what he would be under more trying circumstances.

Pte. J. H.—Right vision, 6/36. Left vision, 6/36. 5 diopters of astigmatism in the right eye and 6 in the left.

Pte. J. H. O.—Right vision, fingers at 2 feet. Left vision, 6/36.

Pte. F. H.—Right vision, 6/60. Left vision, 6/60. Retinitis pigmentosa.

Pte. A. F.—Right vision, 6/36. Left vision, 6/36. Old trachoma with panus.

Pte. L. J. K.—Right vision, 6/60. Left vision, 6/60.

Pte. H.—Right vision, 3/60. Left vision, 3/50.

Pte. B. R.—Right vision, 6 to 8 feet. Left vision, 6/60.

These details may surprise some of you as examples of some of the individuals who have been passed fit for military service. These men are absolutely incapable of any military work, but rest assured they will all be fully capable of attributing their disability to service, and demanding a pension when that time comes. From the low standpoint of cost, this is a large question. Take for instance the following cases:

Pte. F. J. B., twenty six years old, 32/12 service. Ten months ago, whilst in France, this man began to be troubled with headaches and with difficulty in seeing at night, and for this he was evacuated to England. Upon admission to hospital, right vision is 6/36, left vision counts fingers at one foot. Examination of the fundus shows marked disseminated choroiditis in each eye, more marked in the left. There is no history of illness previous to enlistment except malaria five years ago. He says the left eyesight was "poor" on enlistment. Wassermann negative. How much of this man's present disability is due to service, and how much of his disability is pensionable?

Spr. N., after some months' service in France was admitted to hospital April 11th, 1918. Right vision, 6/24, left vision, fingers at three feet. In the right eye there are several patches of choroidal atrophy, in the left eye extensive vitreous opacities. He claims his vision was good on enlistment, the fundi, however, show a condition which looks like an old one. Wassermann negative, urinalysis negative. This man is unfit for service and must be discharged. How much of his disability is due to service and what pension is he entitled to?

The medical officer who lowers the standard and passes an unfit recruit does his country harm from more than one point of view. The military medical officers should have the assistance of an ophthalmologist, or someone competent to say what eyes are diseased, and what eye conditions are incompatible with efficient service. Medical officers should be competent not only to estimate the amount of vision, but they should be instructed in the essential details in this respect, and be competent to give an opinion as regards an eye whether healthy or pathological. The Canadian

Medical Service has been far in the vanguard in this respect. The appointment of an officer specially qualified in ophthalmology to a position in a field ambulance, to attend to special work in certain areas, marks a big step forward in military medicine. Unfortunately there are still many specially trained medical officers who are enshrouded in that wondrous work "Administration".

In military, as in civilian ophthalmology, a considerable percentage of one's work consists in the estimation of the errors of refraction, and work relative thereto, and in this part of one's duty, it is most essential to get the military point of view. And by this I do not mean to regard almost every patient who appears as a malingerer, but for one to understand that in military life one is dealing with individuals, a certain percentage of whom are not averse to avoiding duty be that even a pleasant one. In civilian life one is consulted in the hope that a proper remedy may be supplied and consequently has the whole hearted assistance of the patient. In military life the soldiers are often individuals who wish to avoid work and duty, who, to give it the soldiers' term, are "swinging the lead". One needs to be very much on the alert in examining such cases, as a great deal depends on the personality of the medical officer. To be hasty with men of this class is to defeat oneself. The best method of dealing with them is to deceive them as to your knowledge of their case as they are deceiving you, or think that they are, as regards their complaints. When one finds a low visual acuity without any evident cause, suspicion is of course aroused, but whether it is the patient's manner or not, almost invariably there is something which tells one this patient is not telling the truth. Unless a soldier's vision is improved considerably by glasses, he will not wear them, so that there is only one reason which warrants prescribing glasses for a soldier, and that is that by prescribing glasses you change him from an unfit to a fit soldier. To my mind there is no other excuse which warrants putting glasses on a soldier, for it is to be remembered that if a soldier can get along without glasses he will, especially since gas masks have come in vogue, and it is a grave mistake to prescribe them, for when you do, you supply him with an excuse which he always has with him for lining up on the sick parade. A man who breaks his glasses or a man wearing glasses who complains of headaches is immediately sent away for examination, and immediately avoids a duty which he did not wish to perform. It does not matter whether his refraction was finished only a few days previously or not. Medical officers have learned well to associate

headaches with errors of refraction. It is to be remembered that in a soldier complaints of headaches or pains of any sort are not reliable symptoms of disease. I opened two mastoid processes in France before I found out that pain was not a reliable symptom of disease, certainly not in a soldier wishing to get to "Blighty". Again in the healthy out of door life of a soldier, errors of refraction should not cause headaches. Pains in the head of all kinds, photophobia and night blindness are frequently complained of, the actual defect seems to be the last complaint thought of. Amongst soldiers one finds a tendency to exaggerate a natural defect, so that the estimation of the real error is by no means simple. The patient may have worn glasses for astigmatism or for a small degree of myopia before enlistment and then discarded them. It is difficult to get such patients to admit improvement in their vision, even with proper lenses, and, as suggested, the detection of this obstinacy is sometimes exceptionally difficult. I consider the wholesale refraction of troops and the supply of glasses to combatant forces a grave mistake. Where glasses are ordered, I feel they should be as simple as possible. It is a grave mistake to give a soldier with normal vision lenses correcting small degrees of astigmatism and hyperopia.

Pte. C. Q. has right vision 6/18, left vision 6/12, each eye with cylindrical and spherical plus one, corrected to 6/9 plus. With both eyes this man had 6/6 vision, but returned within a month to say that "he could not see with his glasses".

Pte. M. came complaining of headaches and dizziness. Dizziness has now become a fairly common complaint, as it has been found out that this is a symptom which promises well as regards the object desired. There was no error of refraction, fundi were normal, with a plus and minus two before each eye his vision was normal.

Pte. H., right vision 6/5, left 6/18. He had been prescribed a plus one right eye and plus three for the left. This man had served a long while in France without glasses. There is hardly an indication to supply glasses here in civilian, let alone in military practice.

Pte. G. W. A. came with marked photophobia, he had 6/60 vision in each eye which can be improved to 6/36 and 6/18. As is usually the case, this man says he is unable to wear the lenses as they hurt his eyes and do not help the constant "blinking".

During the examination for refraction one finds a variety of defects, prominent among them amblyopia exanopsia. If these

cases have slipped through the examiners and have been overseas, the blindness is almost always attributed to overseas service. Where there is a large degree of astigmatism, the probability is that the amblyopia is of long standing. Squint, scars on the cornea, myopia and astigmatism help to place the amblyopia as old, but latterly after having observed the pranks of high explosives on the shape of the eyeball, I am very careful in coming to a hasty conclusion. From observation I feel sure that I have seen cases of men who have had normal vision before proceeding to France, and who, from the effects of high explosives are now men with a high degree of myopia. Cases have also been seen of very high amounts of astigmatism, five or six diopters in each eye. These patients in civilian life were at such work as engine drivers where routine examination of their vision was made. They say it would have been impossible for them to have carried on their civilian work with such visual defects. There is no way I know of to explain this defect, except from high explosives.

P. D. was blown up by a shell in August, 1916; right and left contusion of the eyeball. On admission, right vision was 6/36, left vision 6/12; the right disc was badly cupped, this has gradually disappeared. There remains right vision 6/36, with a high degree of myopia and astigmatism with normal fundus. Left vision normal. This man is positive that his right eye has been affected only since his being blown up.

The following is a typical case: Pte. McC.—This man says his sight was good before going to France. There is certainly no doubt that it must have been very much better for him to have got to France. On April 4th, 1917, he was operated on for gunshot wound in the head with fracture of outer table. Right vision 3/60, left 6/60. With minus seven each eye, vision 6/24. No fundus changes.

One day I was called to the throat clinic to see an ear case, a patient who had been deaf and dumb for several months. He had not been overseas. After getting the history of the case, I examined him in the usual way. When I had finished I said to the medical officer whilst looking right at the patient, "This man hears as well as you do, report him a malingerer." The man went back to his battalion and reported that he had been "faking" all this time. The malingerer who comes to the hospital with the intention of deceiving you is a nuisance indeed. It is surprising the amount of your time he can waste. "A malingerer is one who is not ill and pretends that he is, if he *bona fide* thinks he is ill, he is

not guilty of that pretence." When your suspicion is aroused, most of these cases are detected by Snellen's letters. Some of this type, however, are almost uncanny in their ingenuity, and their mental outlook needs to be studied very closely. Some maintain malingerers can only be successfully dealt with by strong measures, such as the faradic current. The malingerer may stand one or two applications, but he cannot face the prospect of a daily repetition and so he quickly gets well. With functional cases one needs to be very patient, they resent, perhaps properly so, being told they are malingerers and resent it keenly. I remember in the early days of the war examining a patient who had to be led into the clinic, but who with a plus and minus six could read 6/6. I made a note on his chart that he was a malingerer. Some enthusiastic chum of his read it to him. He felt very keenly on the point. He had volunteered originally; he had been overseas, wounded, returned to Canada, had given up a good position a second time and re-enlisted and been to France again. Nevertheless there were the facts, he could read 6/6 with a plus and minus six, although he had to be led into the clinic. It was with the greatest difficulty that I restored his peace of mind.

The patient with functional amblyopia, war neuroses, or whatever name you wish to give it, is entirely different. Some of these are pathetic in the extreme. In dealing with cases of this class the first thing obviously to do is to decide whether you are dealing with disease, a functional condition, or malingering, and here it might be well to remark that it is a mistake to think that all malingering is the outcome of deliberate wickedness. Moral responsibility is a variable quantity, and great allowance has to be made for the personal equation. The patient with functional amblyopia is much easier to diagnose than the malingerer. A method with which I have had great success is as follows: One eye is examined at a time and the vision recorded; this may be anything from hand movements to 6/24, seldom above it. A plus six is then placed before the eye and the patient is asked whether that blurs his vision or not; the answer is generally that the vision is more blurred; a minus one is now added, then minus two, and three, and four, and five and six, slowly and at the same time encouraging the patient whose vision has been improving with the application of each lens so that at the time that we have a plus and minus six before the eye he reads 6/6. This method has proved most satisfactory where the blindness complained of has been of one or of both eyes and also where the dimness of vision has been

only one of degree. When the diagnosis is established, treatment must vary accordingly, and here much depends upon the individual you are dealing with and how you have sized him up, and perhaps what impression you have made upon him. Rest in bed, with a sedative, for a few days nearly always improves these cases. Sometimes widely dilating the pupils is a beneficial measure. Easton's syrup, baths, light exercise generally suffice to bring about a cure. On the other hand one meets from time to time with cases that are exceedingly refractory.

Spr. G. W. R., aged twenty-five, with three years and five month's service, was gassed in December, 1917, when his face was slightly burned. He was evacuated from France and was admitted to West Cliff Hospital on February 18th, with a history of having been blind since the day after he was gassed. The pupils and the fundi were normal; vision of each eye acknowledged was not more than perception of light. With a plus six and a minus six the patient would only admit 6/60 vision. He was put on Easton's syrup, drops sulphate of zinc, 1 per cent. (they generally derive more benefit from drops that sting slightly). Two weeks later the vision had improved with the above lenses to 6/36 in each eye. We had at West Cliff at this time a number of blinded patients who were about to proceed to St. Dunstan's Hospital. The patient in question heard so much about St. Dunstan's he evidently made up his mind he was going there. He had to be led about, he started to study Braille and he was most persistent that he be sent to St. Dunstan's that he might learn a trade. To remove him from the "blind" atmosphere I had him transferred to another Canadian hospital, where cases of war neuroses are treated. Being interested in this case I wrote to the Officer Commanding a short time afterwards, and the following is part of his reply: "The day following his admission he was given three minutes' treatment with the faradic wire brush and at the end of that time admitted he could see quite well. Since that time there has been no tendency to blindness and he will shortly be discharged to duty."

Lieut. M., aged twenty-two years, with six months' service in France, was wounded May 10th at F—, slight wound in the arm. He was also buried for some minutes at this time. He was invalided from France and has been in a number of hospitals, and although he noticed in France that his sight was failing, it was only while in hospital in England that he suddenly found that he was completely blind. He was admitted to West Cliff Hospital October 13th, 1917. Vision of about 2/60 in each eye, not improved, no fundus or organic

disease. He was put upon Easton's syrup, rest in bed, etc., being taken out daily for a walk, and led about by a friend. Three days later the vision was fingers at two feet in each eye, with plus and minus six, 6/24; two weeks later his vision had improved to 6/18 plus; two weeks later his vision with these lenses was normal in each eye. When it was explained to him that the glass that he had in front of his eye was very weak, he was convinced that his vision was good without glasses.

Whilst tests for vision and refraction form a large part of military ophthalmology one finds in camps the ordinary civilian complaints, the usual number of accidental injuries, ruptured globes, the usual material of a good clinic. One feature of cases seen in camp was the large number of phlyctenular conjunctivitis cases in adults, and the large size of the phlyctenules; I have never seen anything approaching them in size. I have not seen an epidemic of conjunctivitis amongst soldiers and very few cases of gonorrhœal ophthalmia. Trachoma or *Ophthalmia Militaris* of the last century has almost disappeared as a military disease. The importation of labour into our army from the East may, however, alter this. The absence of an epidemic of conjunctivitis and the absence of trachoma is of interest considering the condition of Europe during the Napoleonic Wars. Historically it may be of interest to recall to your mind the fact that Hannibal's army was incapacitated for one winter in Italy with ophthalmia. Following the original gas attack in France in April, 1915, there was a large number of cases of conjunctivitis. I was struck with the sequela of iritis in a number of these cases, and in discussing this matter with Professor Morax, he had also noted this. Evacuation was being carried out so rapidly, however, it was impossible to follow up this point. The mustard gas conjunctivitis of the present day is a condition marked by intense and persistent photophobia with marked blepharospasm and severe lacrymation. It is most persistent in its course and not infrequently leaves behind it macula corneæ and a persistent blepharitis or eczema of the lids. In early cases an oily lubricant is beneficial and grateful, with drops of cocain and adrenalin, this to be followed later on by some astringent drops such as sulphate of zinc. I dislike supplying dark glasses to these cases as in many of them the functional element is very apparent, and it is quite difficult to get the patients to do away with the dark glasses after he has been wearing them for a little while. Conjunctivitis has been seen associated with dysentery enough to excite notice. Whilst in the East, recovering from

dysentery, I, myself, developed a severe conjunctivitis. This was prodromal to an acute rheumatic condition. The appearance of a severe metastatic conjunctivitis preceding an acute rehumatism has been noted.

Amongst military symptoms of disease night blindness takes a prominent part. It has been frequently met with, and in a number of cases has been associated with true retinitis pigmentosa. Nyctalopia in soldiers has been put down by some as a symptom of neurasthenia. This, I think, is a mistake, from the cases that have come under my observation.

Functional night blindness was well recognized before the war, and nyctalopia has been reported as endemic in certain countries, especially in Russia during the Lenten fasts. It seems to me, we may well attribute this complaint or disease in a certain number of cases to exposure with the hard work and great fatigue consequent on service. There is, however, no doubt in my mind that many soldiers have heard a chum complain of night blindness with the desired result, and have then gone and done likewise. A clever malingerer finds it an easy complaint to simulate, and one the simulation of which is hard to detect.

The result of Wassermann reactions amongst individuals of military age may be of some interest. In one hundred and five cases of iritis, the reaction was positive in thirty-three and negative in seventy-two. These are remarkable figures when one considers the age of the majority of patients and the relationship between venereal disease and active service. In four cases of retinitis pigmentosa the reaction was negative; in eleven cases of optic neuritis, five were positive, six negative; in seven cases of interstitial keratitis the reaction was positive in all; in thirty cases of retinochoroiditis, fifteen were positive and fifteen negative. In the Canadian Medical Association Journal for November, 1916, Captain H. G. Courtenay and the writer reported on a number of cases where eye lesions, such as iritis, optic neuritis, and retinochorocditis had appeared in soldiers who had had a full course of arsenical and mercurial treatment.

Lieutenant W. L., aged twenty-two years, consulted me in May, 1917, on account of the loss of vision of his left eye. He had been infected in December, 1916, for which he had had a complete course of treatment of both arsenic and mercury at one of the military hospitals. Upon examination the right eye was found to be normal, the left vision fingers at three feet due to dense opacities in the vitreous which prevented a detailed examination

of the retina. Upon inunctions of mercury, hot baths, and hypodermic injections of pilocarpin, his progress was steady and satisfactory. At the end of one month the vitreous had cleared so that the retina could be seen and the dimness of vision was found to be due to hæmorrhages in the macular area. His vision was then 6/36.

Bdr. J. D. came to the clinic in June, 1917, with a gumma of the right iris; this after a full course of arsenic and mercury.

Sergt. G. C. F. reported to the clinic with a retinal choroiditis syphlitica. He had recently finished treatment extending over one hundred and sixty-seven days.

Pte. S., aged thirty years, service 31/12, reported at the clinic on March 24th, with right and left vision, fingers at one foot. Examination showed very severe retinal choroiditis in each eye. This man had only finished a course of arsenical and mercurial treatment in January, and in February had a negative Wassermann. Under inunctions of mercury his progress has been steady. At the present time his vision in each eye is 6/18.

The treatment of syphilis of the eye will always, I presume, be a subject of more or less controversy. Each one, however, must profit by experience; and I prefer to treat such cases to a conclusion for their eye condition, and then hand them over to a venereal expert for further examination and treatment if necessary. To my mind, syphilis of the eye reacts better to treatment by inunctions of mercury than by any other.

Among roughly three thousand ophthalmic cases admitted to West Cliff Eye and Ear Hospital I have seen two cases of sympathetic ophthalmia.

Pte. G. was wounded June 4th, 1917, at V——, in the right eye and right shoulder. The right eye was removed on June 26th. On July 28th, he first noticed his left eyesight failing, and on July 31st he was admitted to West Cliff Hospital, service of Captain Newbold Jones, with a well marked sympathetic ophthalmia. The iris was injected and adherent to the lens capsule at four points, punctate keratitis, dustlike opacities of the vitreous, and optic neuritis. The eye was bandaged and he was put on systemic treatment of salvarsan and mercury and local treatment with atropine. The eye quieted gradually, the iris assumed a normal appearance and position, and on December 18th his vision was normal, eye quiet.

Colonel V. K., aged sixty-one years, was injured in the left eye on September 27th, 1916, and admitted to hospital that day. In spite of constant ice compresses, the eye on the morning of October 18th was slightly painful to pressure and was enucleated

the same morning. He was discharged from hospital on October 30th, the right eye normal with vision 6/5, the whole line. During the following week he developed a sympathetic ophthalmia and was treated outside by excision of the stump of the optic nerve and salvarsan. Some weeks later he was seen at this hospital, he had completely recovered and had normal vision.

During routine examination many interesting congenital conditions of the fundus have been seen. The concussion following modern explosives leads to a great variety of fundus lesions. This subject has been taken up by a number of writers in this country as well as abroad. The injuries are caused by the violence communicated through the bones of the skull, the bones of the orbit, or by air vibration—windage. The most remarkable part of this study to me, was to see the serious damage which could be done to the eye, due entirely to windage and where there was apparently no injury caused to the sclerotic coat. Lagrange has recently published a war atlas dividing the fundus lesions into groups and defining rules governing disorders of this kind. He says lesions by concussion are seated at the posterior pole and especially in the macular area, and secondly that the lesions by contact are always in front of the orbital fracture or at the very spot where the missile could graze the eye; that the lesions by concussion are choroidal and those by contact choriodo-retinal. He describes a condition which he calls traumatic proliferating choroido-retinitis, which is the result of organization of the blood extravasated up to the superficial layers of the vitreous through the lacerated retina. We have seen a great variety of these different fundus lesions.

Pte. E. C. L., wounded at P——, October, 1917. Externally the right and left eyes uninjured. The left eye below shows a large rupture of the choroid with retino-choroiditis proliferans; the right eye shows a small rupture of choroid to the temporal side and below—the choroido-retinal changes from contact.

Pte. W. D. S., wounded below the margin of the right orbit, fracture of the malar. Left vision, 6/9, right vision, perception of light. The right fundus shows below the border of the disc a large rupture of the choroid with numerous areas of displaced pigment—another choroido-retinal condition from contact.

Also Pte. W. H. F., wounded in the head, fracture of the frontal bone. No external injury to the eye. Fundus shows small rupture of the choroid below the macular area, displacement of pigment above and to the outer side and a pepper like appearance in the macula.

Sergt. R.—In March, 1917, this N.C.O's. gun was hit and there was tremendous "windage" to the right side of his head. He was evacuated for wound in the foot. He soon began to notice spots before the right eye. Externally this is normal. Toward the periphery of the nasal side of the disc there is an area about one and a half times the disc of displaced choroidal pigment, also dustlike opacities in the vitreous. Right vision 6/36, left vision normal. Choroiditis from concussion.

Co. S.-M. B.—This N.C.O. had on March 9th, 1918, a fall from a bicycle injuring his head. Notes on the case state that he fractured the temporal bone at the external angle of the orbit. On recovering consciousness he had only perception of light in the left eye. This had not improved since. Right vision, 6/6, left vision perception of light. The left fundus shows primary atrophy of the optic nerve.

One of the commonest lesions of the fundus which I have met with and which I have not seen described anywhere is a condition of traumatic-retino-choroiditis characterized by diffuse cloudiness of the retina, numerous small exudates in the choroid and fine dustlike opacities of the vitreous. It is identical with retino-choroiditis of secondary syphilis. It varies in degree from a very slight opacity of the vitreous to diffuse thick opacities with changes in the choroid. I have seen a large number of such cases where I am positive the changes were due to trauma-windage.

Pte. V. was buried on the S.——Right vision 6/6, left vision, hand movements; left vitreous full of dustlike opacities, retina cloudy. Wassermann negative. A typical case of traumatic retino-choroiditis, which has been by far the commonest form of traumatic lesion of the fundus that I have seen.

Pte. F., thirty-four years of age, was blown up on March 2nd, 1918, since which time the sight of his left eye has failed perceptibly. Prior to this accident his vision was good, but since the explosion it has been failing, so that at the present time he has left vision, fingers at two feet; right vision, 6/6. In the region of the macula he has a tiny patch of choroiditis, dustlike opacities. Wassermann negative.

Gnr. J. K.—is an example of a typical case of traumatic retino-choroiditis. He was blown up at W., luckily he was not injured in any way except that he could not see so well with his left eye. Upon admission shortly afterwards to West Cliff, right vision was normal, the left vision 6/36. The optic nerve is obscured by dust-

like opacities in the vitreous; there are some tiny opacities also in the lens. Wassermann negative.

Corpl. M. was admitted to hospital complaining of diminution of the right eye; this had followed an injury received in France when he was blown up. Right vision, 6/24; left vision, 6/9; dust-like opacities in the vitreous with definite choroiditis to the nasal side of the disc. Wassermann on two occasions negative.

Pte. R., forty-five years old, was hit by a piece of falling timber on the head and right shoulder in March, 1918, and a few days later he noticed the right eye was practically blind. When admitted to West Cliff, right vision, 3/60; left vision normal, right eye retino-choroiditis traumatica, left eye normal.

Surgery forms one of the most interesting parts of military ophthalmology, though many of the operations of civilian practice are not met with at all. One reason, and one reason alone, should form the basis for all military operative work—necessity.

It is most unwise to correct strabismus, for instance, for cosmetic reasons, or to do any operations of a similar nature. If a recruit is accepted for service with a disability of this kind, and an attempt is made to correct it, he first becomes a hospital patient without being ill or wounded (in itself most undesirable), and, secondly, he is given the starting point for an attempt to obtain a pension. Dacryocystitis is not infrequently met with in military work, and for military purposes, and the same would hold among industrial workers in civilian life, I can very strongly recommend the West operation. By this, after elevation of the mucous membrane and chiseling away the bone over the lacrymal sac, the nasal wall of the lacrymal sac is cut away. An artificial communication with the nasal cavity below the inferior turbinate is thus established. Faulty drainage is corrected immediately and the result is most satisfactory. With Captain C. W. Graham, C.A.M.C., the writer has done a number of these operations and the result has been most satisfactory, especially so for military personnel where syringing, probing, etc., are inadvisable and where the epiphora after excision of the sac gives the individual a constant disability.

Lieutenant L., forty-three years old, came to hospital complaining that the had had a dacryocysitis, right and left, for some months. He was treated by syringing for three weeks, and although improved by this, the epiphora remained enough to be troublesome. Within a few days of each other a right and left intra-nasal drainage operation was done with most satisfactory

results. He was discharged to duty thirteen days later. He came to see me some months after, whilst on leave. He had not had any further discomfort with his lacrymal apparatus.

This typical case is cited to show how quickly this method will enable one to return a man to his work, which after all is a medical officer's first duty. In one case we had some difficulty with post-operative adhesions, and subsequently used a celluloid splint for a day or two, a splint such as is used in sub-mucous resection.

While eye injuries in the Chino-Japanese War of 1894 form only 1·2 percentage of all wounds, it will be found that they take a much larger percentage in this war. The terrible face injuries of Armageddon has placed before us the opportunity for wonderful development in plastic surgery of the face. For the repair of damage to the orbital walls Lagrange gives three mothods:

1. Metallic plates.
2. Adipose grafts.
3. Cartilage grafts.

He quotes Morestin extensively in giving the history of cartilage grafts and emphasizes that he has erred in trying to do too much at one operation. He first does a blepharo-plasty and six weeks later introduces under the skin the necessary cartilage and cellulo-adipose tissue. Another more useful purpose to which cartilage is being put is its implantation after enucleation or evisceration of the eye. The restoration of the eyelids by frontal or malar flaps has proved most satisfactory. Enlargement of the conjunctival cul-de-sac has always been a difficult matter and one not always approached with pleasure. "Magitot covers a piece of metal with an epidermis flap and introduces this into the orbital cavity in such a manner that the lower surface of the flap is applied to refresh the surface of the inner aspect of the eyelids." Lagrange uses Snellen's sutures and reports great success from this method. In the *Annals of Surgery* for March, 1917, Esser has given us his "Studies in Plastic Surgery of the Face". The procedure for enlargement of the conjunctival sac is described there as follows:

"The enlargement of the conjunctival sac is very often required to make room for the eye prosthese. In these cases the eyelid skin is then cut parallel with the eye slit, higher or lower according to the case; generally scars must be taken away. And now, after lifting the upper part of the cut, an impression can be taken (best with the assistance of a dentist) with sterilized wax material. This, after hardening, is carefully surrounded in the

described manner with very thin Thiersch, which is then placed in the wound, and closed with pressure.

"The mould must be made in a manner and with such pressure that its size is such that afterwards, on sewing the wound together, sufficient tension results. Before cutting the Thiersch, which only takes place when everything is prepared to receive it immediately, without first placing it in a physiological solution, the hollowed mould must be placed in the hollow and the incision pressed together with the fingers, to see if the tension is correct, otherwise the mould can be altered. It is not practical to enlarge it by adding to it, as the join leaves a line where the Thiersch later on falls in, but it is better to make a new mould if the first prove too small. It is possible to decrease the size if too large, by cutting before it is quite hard and softening down the cuts.

"The closing under pressure by the sewing is necessary for two reasons—first, the Thiersch is pressed everywhere for quick healing, and second, possible bleeding is prevented. Though I construct the hollows by cutting on purpose to open the most possible number of little blood- and lymph-vessels (by all free transplantations, I prefer this method to the blunt preparation in general use, because it gives better healing condition). By sewing together under pressure, the small vessels are all closed—only the large arteries must be squeezed or twisted, but not tied, as no foreign substance may remain between inlay and wound. In consequence of the pressure a primary healing of the suture is not sure, but mostly of less importance as an ugly scar can be easily corrected afterwards. After about two weeks the conjunctival sac is cut parallel to the eye split, and at such a distance from it where the inlay is nearest to the surface. The mould is removed and the smoothly healed hollow is annexed to the eye hole in order to receive the eye-prosthese, which must be placed directly so that the still elastic hollow can adapt itself to the prosthese form. It is now clear that the hollow must be constructed everywhere as near as possible to the mucous membrane."

Esser, in his article, forecasts considerable increase in the types in which this method will be useful, and already most valuable progress has been made in this respect. Major C. W. Waldron, C.A.M.C., first undertook charge of the face injuries' service at West Cliff Canadian Eye and Ear Hospital. This service, in need of greater space, was later moved to a Canadian General Hospital and later to "The Queen's Hospital". Majors Gillies, R.A.M.C., and Waldron, C.A.M.C., have enlarged on Esser's methods and

given us a most valuable means of remedying many of the war distortions of the lids by a method of epidermic outlay as compared with Esser's epidermic inlay. Waldron has modified Esser's method by making the incision in the conjunctival sac instead of through the eyelid skin; an impression compound mould is made, covered with the skin graft and buried in the manner described, except that over the mould are sutured the cut margins of the conjunctiva. Waldron suggests undercutting the tissues of the cavity a little so as to make the cavity somewhat larger than the desired enlargement of the sac. He also suggests that in many cases it is found difficult to make the incision close to the Tarsus. In making an inferior fornix he overcomes this condition by making the incision outwards and slightly downwards for a distance of one cm. from the external canthus. This modification has the following advantages, in his words:

1. Unnecessary scarring of the eyelids is prevented and the normal elasticity of the skin not impaired. As it is not uncommon to have an accumulation of serum develop around the buried graft, sutures may give way and slight infection may take place without impairing the success of the graft. These minor complications, however, in the case of inlays buried through an incision in the eyelid skin, may lead to granulations and scarring, and in rare instances epithelialized fistulæ have developed necessitating operative excision and closure.

"2. The exact position of the new fornix may be better outlined by an initial incision through the conjunctiva than by the undercutting to a point just beneath the surface of the conjunctiva. In our experience, the fornix may be made closer to the tarsal plate by incising through the conjunctiva.

3. The depth and direction of the cavity can be readily determined according to the necessity of the individual case."

Major Gillies, R.A.M.C., has made two modifications of the Esser process. The first method consists in the graft covered mould being buried in the subcutaneous tissues of the eyelid through an incision in the skin and is removed through that incision. By this method the eyelid skin is increased to the extent of the graft. This is especially useful in contractions following burns. The second method may be termed an epithelial overlay. Here, extensive undercutting may be necessary before the remains of the eyelid can be brought to the normal position and the covering in of a graft covered mould is impossible. "After the remains of the eyelid have been sewn in a favorable position, scars excised and an

impression taken of the entire raw area, a Thiersch is then applied to the raw area and held firmly in place by means of the compound impression. This may be left in position for ten or twelve days. By this procedure the employment of pedunculated flaps may be avoided in many cases."

Pte. M. W. was sent to West Cliff for repair of his right socket to enable him to wear a glass eye. After the usual preparation, and under an anæsthetic, an incision was made along the lid margin the entire length of the damaged third of lid, the edges were separated and dissection was continued to a depth thought necessary. The cavity was then fitted with a mould of sterilized dentist's compound and sutures loosely put in place through the lines of incision. When the compound had been pared to the proper size, a Thiersch graft was obtained from the arm and wrapped around the compound with the skin surface next to the compound. This was then placed in the cavity, which had been thoroughly dried, and the sutures were drawn so as to keep the compound firmly held within this cavity. Ten days later the stitches were removed, the compound taken out, the graft had united entirely, the desired line of the lid had been repaired and the patient able to wear a glass eye.

Spr. W. M., service of Captain W. E. Ainley, with left anophthalmos, was unable to wear a glass eye on account of the shallow nature of the lower conjunctival cul-de-sac. Line of incision along the lower palpable conjunctival sac was made, an epithelial inlay set in, on compound and sutured, the compound was removed ten days later, the epithelial inlay had entirely taken and made the wearing of a glass eye a simple matter.

These two cases will prehaps suffice to give you some idea of what can be done in the repair of the lids by epidermis inlay and outlay. These methods offer much to ophthalmic surgeons. The results obtained in extensive ectropion following burns, by the epidermis outlay, technique of Gillies, are most satisfactory. Equally so are the results obtained by the epidermic method of Waldron in injured lids and in shallow and distorted conjunctival sacs. The development of military ophthalmology along these lines has been extensive indeed. The repair and even the reformation of the whole lid as well as the repair of the conjunctival cul-de-sac by the Esser, Gillies and Waldron methods, marks an epoch in ophthalmic surgery.

The subject of military ophthalmology is so large I have only been able to touch here and there on some of the essential features. I hope, however, that I have been successful in drawing your

attention to what an essential part of military medicine ophthalmology really is.

It is to the credit of the Canadian Army Medical Service that at a very early period of the war the necessity for a special hospital was noted, and that in October, 1915, the West Cliff Canadian Eye and Ear Hospital was opened with a capacity of one hundred and five beds. There were three administrative and four medical officers, ten nursing sisters and twenty-seven other ranks. From that beginning the hospital has increased until at the present time it has an establishment of four hundred beds, twelve officers, and forty nursing sisters. There have been admitted to hospital, 9,854 cases and there have been 49,906 consultations in the out-clinic department. Here are prepared the special reports so essential to medical boards, for categorization, for pensions and for the final disposal of men. Much credit is due to Colonel J. D. Courtenay, of Ottawa, who by his initiative had a great deal to do with the establishment of the hospital. By his persistence he saw that it was properly equipped, and by his foresight made the necessary accommodation for its possible growth. The hospital was originally intended to be the head of the Canadian ophthalmic service where civilian ophthalmologists would be sent for military training. Unfortunately, war time is one of changes. We are, however, practicing military ophthalmology in as conservative and in as scientific manner as possible. We have all the equipment, including library and laboratory, necessary for such work and hope a sufficient number of civilian ophthalmologists are being trained for useful military duty. These officers will later be looked to, to decide many important questions. What eye injuries and diseases are due to service? What is the relationship between wounds of the cranium and defective vision? Soldiers with loss of central vision and no macular changes, is this due to service and is it pathological or functional? What injuries are due to "windage"? What is rational treatment for malingering, functional amblyopia, war neuroses? What is the amount of disability due to hæmianopsia? All these, of a professional nature, and more, and many medico-legal ones are questions which must be decided by us with fairness to the individual and to the State.

ADMINISTRATION OF ARSENIC IN SYPHILIS

By Major W. T. Lockhart, C.A.M.C.,

and

Captain J. R. Atkinson, C.A.M.C.

Canadian Special Hospital, Whitley

AT a recent representative meeting of the British Medical Association the chairman, Mr. E. B. Turner, F.R.C.S., referring to venereal disease, drew attention to the wide dissemination of syphilis which would be particularly apparent after demobilization of the troops, and he urged that general practitioners should prepare themselves for the treatment of this disease by modern methods.

The educated portion of all civilized nations is becoming more and more alive to the enormous influence which syphilis will have on the future well being of the nation and to the tremendous increase in the dissemination of this previously world-wide disease, due to the great war. Measures of prevention are now freely discussed in places where a short time ago the mere mention of venereal disease would have caused shocked consternation. With this awakening there will come a demand for the sole effective means of prevention, which consists in the sterilization by treatment of infective cases so that they no longer constitute foci for the dissemination of their disease.

It has been observed that syphilis is the most protean of diseases. Its manifestations in individual cases are as varied as humanity itself, and it is scarcely to be expected that the general practitioner will have time or opportunity to thoroughly familiarize himself with all of them. There will always be room and work for the specialist, but the general practitioner should be able to recognize the more obvious cases, which are those really dangerous to the public, and by the method introduced by Ravaut and Thibierge and referred to in this paper, he can treat the majority of them far more satisfactorily than he can most of the other ailments with which he has to deal.

One of the chief objections appears to be that raised by a London doctor in a recent letter to the *British Medical Journal*, in which he complained that the technical apparatus required was elaborate and expensive, as well as being troublesome to manipulate. In the majority of clinics this is quite correct, for they still use the gravity apparatus and dissolve the arsenic preparations in large quantities of distilled water, besides having a considerable amount of normal saline solution in the alternate tube for the purpose of indicating that the needle has penetrated the vein and for washing out the portion of the dose below the "Y" tube at the completion of administration. This method of administration necessitates a special still and much sterilization each day of the apparatus used, as well as possession of the equipment itself.

Many efforts have been made to simplify the administration of the organic arsenic preparations. They have been enclosed in capsules by enterprising manufacturing chemists, in order that the dose might be swallowed or introduced into the rectum. Unfortunately the drug is too unstable for this method and appears to lose its efficacy as a curative agent when so administered. To obtain therapeutic effect it is necessary to introduce it directly into the circulation or mediately by intramuscular injection.

Persistent attempts have been made, by combining the drug with various local anæsthetics, to avoid the intense pain and disability which is caused by even the blandest of the new organic arsenic preparations when injected into muscle, or subcutaneous tissue. Susceptibility to pain varies so greatly that while some individuals do not appear to suffer much, the majority complain very bitterly of the pain caused by these injections, and it is not likely that this method will become at all popular among patients, a consideration which will probably have more weight in private practice than in the army.

The view sounds reasonable and it may yet be proved that owing to slower and more continuous absorption, the therapeutic effects of arsenic introduced into muscle tissue are greater than when introduced directly into the circulation, but in so far as therapeutic effect is indicated by the rapid involution of external syphilitic lesions and the reversal or inhibition of the Wassermann reaction, the intravenous method is equally effective.

The publication of a translation of Professor Thibierge's work on the treatment of syphilis (War Series) led us to adopt his method of administration of concentrated solutions in this clinic, where it has now been in use for three months, and we have

thought that a description of the technique used here and the results obtained would be of interest more particularly to the general practitioner, who requires simplicity of administration without loss of effect.

The apparatus required is to be found in the most modest surgery, for it consists of a hypodermic syringe and two or three small basins, although where a large number of injections have to be given several other articles may be used to increase speed and efficiency.

We have found that by the method about to be described, two officers and two orderlies give from fifty to seventy intravenous injections of arsenic and the same number of intramuscular injections of mercury in less than an hour.

After trial of a number of hypodermic syringes, the one we have found most useful, is a cheap two-piece glass syringe made by Maw of London. The points of special advantage being, a comparatively long barrel of moderate diameter so that, although graduated to 2 c.c., it will really hold nearly 4 c.c., while its narrow diameter enables the needle to be introduced at an acute angle to the skin. The plunger fits accurately and may be entirely withdrawn. There are no metal contractions at either top or bottom. The tapering connection for the needle has no shoulder and fits well so that there is no leaking, and while the needle, when in place, is firm, it can be easily removed. The needle is rather larger than the ordinary hypodermic needle and has a shorter point, so that while a vein is easily picked up there is less danger of a through and through penetration.

Method of Administration

A 30 c.c. burette containing the sterile water is held upright by a stand and is continued at the bottom by a short piece of rubber tubing terminating in a glass nozzle and closed by a pinch cock. One of the orderlies flames the outside of an ampoule of the drug with a small alcohol lamp, files off the tapering end, runs in 2 c.c. of water from the burette and inserts a piece of small glass tubing with rubber connection at one end and a few filaments of wool at the construction near the centre, such as is supplied with the galyl ampoules. The ampoule is then gently shaken. Solution is complete in a few seconds. The ampoule is placed upright in a small board which has had sufficient half-inch holes drilled in it to hold the required number of ampoules.

The officer having picked a syringe out of a small basin of alcohol with dressing forceps, washes it in sterile saline solution, aspirates the contents of the ampoule by means of the rubber connection to the glass tube, picks out one of several needles which are boiling in a container beside him and adjusts it to the syringe. Meanwhile the other orderly has prepared the patient by fastening a light rubber tube round his upper arm and painting below the bend of the elbow with iodine. The patient seats himself at a narrow table on the opposite side to the officer, his arm resting on the table, the officer, steadying the skin with his left hand, introduces the needle into a vein, slightly withdraws the plunger to make certain that the needle is in the lumen of the vein, and, removing the tourniquet, completes the injection. The table should be so placed that the light falls freely on it, the needle puncture is so small that no bleeding takes place and no cotton or collodion is required to seal it.

The officer having completed the injection washes needle and syringe and returns the syringe to the alcohol and the needle to the boiling water. He picks out a second syringe and proceeds as before, using the syringes alternately.

It would be quite feasible of course for one medical man to do all this himself, only he would require several minutes to make each injection.

During the past three months two thousand eight hundred and fifty-nine intravenous injections have been given in the above manner in this clinic. There has not been a solitary case of thrombosis of the vein. There have been no early reactions of an anaphylactic character such as we used to have fairly frequently when injecting large quantities of distilled water, which was not above suspicion. There have been no reactions, late or early, which could be attributed to the method of administration. Owing to the small size of the needle the pain of introduction is less than where the larger needle required by the gravity apparatus is used and much smaller veins may be successfully entered. On three or four occasions the vein has been missed or completely penetrated and solution has been injected into the surrounding tissue. This accident causes a good deal of pain, swelling and disability, which, however, passes off in a few days without abscess formation or permanent indurations.

A microscopic examination of blood withdrawn from the vein into the syringe containing the arsenic solution shows the

blood cells apparently perfectly normal even some hours after withdrawal.

The drugs used by us have been Novarsenobillon and Novarsenobenzol, which have been supplied in ampoules containing 0·6 gm. and 0·9 gm. The smaller doses when required have been obtained by splitting one or more of these when dissolved between two patients.

We have used distilled water in making the solutions but only a very small quantity is required and it is pointed out by Thibierge that ordinary sterilized water free from gross impurities may be used in this small amount with impunity.

It has seemed to us that the administration of arsenic in concentrated solution is more effective than when it is given diluted, for our records for July, the first month in which all the patients being discharged had had a full course of treatment by the above method, show that one hundred and forty-one patients were discharged from hospital as out-patients during the month with their external lesions soundly healed, and that the average duration of their stay in hospital was sixteen days, a considerably shorter period than formerly. These patients return for treatment as out-patients at weekly intervals until their full course is completed.

The distribution of cases was as follows:

Cases with primary lesions only	71
Average stay in hospital	16 days
Discharged in less than 10 days	16 cases
Discharged in 10 to 20 days	32 cases
Discharged 20 to 30 days	18 cases
Discharged over 30 days	5 cases
Cases with secondary lesions	49
Average stay in hospital	14 days
Discharged in less than 10 days	13 cases
Discharged 10 to 20 days	24 cases
Discharged 20 to 30 days	6 cases
Discharged over 30 days	6 cases
Cases with recurrent lesions	13
Average stay in hospital	24 days
Discharged in less than 10 days	1 case
Discharged in 10 to 20 days	8 cases

Discharged in 20 to 30 days	3 cases
Discharged in over 30 days	1 case
Cases with positive Wassermann reaction but without infective lesions on admission	8
Average stay in hospital	11 days

The records for August just compiled show that one hundred and sixty-six cases of syphilis were discharged as out-patients during the month, with an average stay in hospital of sixteen days.

They were distributed as follows:

Cases with primary lesions only	92
Average stay in hospital	16 days
Discharged in less than 10 days	32 cases
Discharged in 10 to 20 days	40 cases
Discharged in 20 to 30 days	12 cases
Discharged in over 30 days	8 cases
Cases with secondary lesions	31
Average stay in hospital	15 days
Discharged in less than 10 days	19 cases
Discharged in 10 to 20 days	8 cases
Discharged in 20 to 30 days	3 cases
Discharged in over 30 days	1 case
Cases with recurrent lesions	35
Average stay in hospital	17 days
Discharged in less than 10 days	19 cases
Discharged in 10 to 20 days	10 cases
Discharged 20 to 30 days	4 cases
Discharged in over 30 days	2 cases
Cases with positive Wassermann reaction but without infective lesions on admission	8 cases
Average stay in hospital	4 days

The total number of patients whose Wassermann test result has been received on completion of routine course is one hundred and thirty-eight cases, one hundred and twenty-seven of these are negative and eleven are positive.

Examination of the eleven cases with positive reactions on

completion of course shows that nine had generalized syphilis prior to coming under treatment at this clinic, while of the other two, one had had his primary chancre for five weeks without treatment before admission to hospital.

The Wassermann tests were made by No. 1 Canadian General Laboratory.

It has been shown that intravenous arsenic as ordinarily administered is eliminated pretty rapidly by the kidneys so that a large part of the dose is disposed of in this way within a few hours after administration. The diuretic effect of the distilled water and saline solution introduced into the circulation along with the arsenic may have something to do with this, and it is reasonable to suppose that when the dose is given in concentrated form it is less rapidly eliminated. We have not had the means to estimate quantitatively the arsenic in the urine and have been unable to verify this supposition.

When arsenic is administered by a gravity apparatus it is customary, in large clinics at any rate, to dissolve the doses for several patients at once, and as the solution is run out, more is continuously added during the period of an hour or longer according to the number of patients. It is clear that in this way some portion of the drug will be exposed to the air for a considerable time, as the tube is never allowed to entirely empty itself and some degree of oxidation is bound to occur.

Where solution is effected in the ampoule immediately after it is opened and the contents injected within a minute or less, oxidation prior to administration must be very slight indeed. In default of support from estimation of the rapidity of arsenic excretion it must be admitted that the number of cases is too few and the period of observation too short to establish the truth of the supposition that concentrated solution of arsenic is more effectual than dilute, but there is sufficient evidence to show that by their use syphilitic lesions undergo very rapid involution and that their administration in suitable dosage is perfectly safe.

VENEREAL DISEASES: THEIR TREATMENT AND CURE

OMAR WILSON, M.D.

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THE present war is doubtless responsible for the upheaval of public opinion, the awakening of the public mind to the prevalence of venereal diseases in such alarming proportions. Certainly such awakening is responsible for the recent act passed by the Ontario Legislature for combatting venereal diseases.

For years we have watched with interest the abortive efforts made in various parts of the world to grapple with this problem, and to Ontario is due the credit of instituting a unique piece of legislation (not perfect by any means) which properly enforced, and loyally supported by the medical profession, promises results heretofore unobtainable.

The success of Ontario's Venereal Diseases Act is dependent upon various factors.

1. The rigid enforcement of the legislation now on the statute books, even to the extent of penalizing medical men who fail to fulfil its requirements.
2. The loyal and intelligent support of the profession.
3. An intelligent appreciation of the act by the laity.

The purpose of this paper is to emphasize the second requirement, particularly "the intelligent support of our profession", and to outline a definite course of treatment, which in the hands of the venereal practitioner will produce maximum results.

The Act explicitly states that a patient shall continue treatment until pronounced cured by a properly qualified medical practitioner. What proportion of medical men are properly qualified to pass on such cases?

Heretofore in our colleges venereal diseases have been shamefully neglected. In gonorrhœa our colleges, hospitals, and clinics have advised potass permanganate irrigations, the essential oils, the three-glass test, and such like until the discharge stops. With such hazy ideas students have been thrown upon the public with the

inevitable result, that husbands (in all good faith) have infected innocent wives, that there exists more gonorrhœa among married women than among prostitutes, and thirty per cent. of blindness in children is due to gonorrhœa.

The responsibility therefore lies at the door of the medical man who advised his patient that he was cured, when actually his condition had been rendered prostatic and chronic. It lies more directly at the door of our teaching institutions, who unquestionably are responsible for the appalling prevalence of venereal diseases throughout the land.

In my opinion, one hundred per cent. of cases of gonorrhœa are curable. The percentage of cures of cases of syphilis would necessarily be somewhat smaller.

A patient recently described prostatic massage as both unpleaasnt and undignified. Allowing this description to be correct, would we not as physicians more properly vindicate the dignity of our profession by making intelligent and scientific efforts to eliminate this great evil, than by continuing the somnolent ineffective efforts we are making to-day?

In stating that one hundred per cent. of gonorrhœal cases are curable, I do so advisedly. Such results, however, are only obtainable with men properly and scientifically trained.

No genito-urinary clinic can possibly do effective work without the co-operation of a fully equipped laboratory. No case of gonorrhœa should be pronounced such without the aid of the microscope—the day of clinically diagnosing any discharge as specific, has passed forever.

Many staining methods have been advanced, but perhaps the simplest and most efficient is either Wright's or Giemsa's. If unobtainable the ordinary methylene blue method will suffice.

The complement fixation test, while not applicable in acute or chronic catarrhal conditions, is yet of considerable value in generalized involvements such as gonorrhœal rheumatism.

Microscopic slides should be taken and reported upon daily, for in no other way can a proper knowledge of the progress of a case be obtained, and treatment should be based largely upon microscopic findings.

Although Neisser was the first to isolate the diplococcus, to Austria is attributable the accomplishment of the scientific and effective cure of gonorrhœa.

A prominent urologist has stated that prostatic massage alone will cure the great majority of cases. There is a smattering of

truth in his statement, for we all know that any case that has been untreated or improperly treated for a fortnight becomes prostatic. Assuredly prostatic massage with protargol irrigations will clear up one hundred per cent. of our cases, if they be otherwise uncomplicated.

As to protargol. Some years ago I was afforded the opportunity of experimenting with germicidal preparations in gonorrhœa. After prolonged experiments I became convinced that protargol gave best results, and curiously enough, that one half per cent. protargol was remarkably more efficient than solutions of greater strength. This doubtless is easily explainable. The silver preparations in catarrhal conditions have two distinct actions—a germicidal action and an astringent one. In solutions of strength greater than one half per cent. the astringent action predominates, closing up the follicles and so preventing the germicidal action to proceed particularly in the deeper tissues.

Technique. In the systematic treatment of a case of gonorrhœa the patient first removes his clothing. The clinician then glances generally over the integument for the prevalence of any rash. He next palpates the groin for adenopathy, examines the scrotum for testicular involvements—orchitis, epidymo-orchitis, varicocele, bubonocele, rupture or hydrocele. He now examines the penis. Patient retracts the prepuce which is examined for phimosis, paraphimosis, chancre, chancroid, and venereal warts. Some urethral discharge is now expressed and this is placed on a microscopic slide. The patient then urinates, after which physician examines the prostate and seminal vesicles. A second slide of the prostatic secretion is now obtained.

An old teacher of mine advocates prostatic massages and bladder irrigations of protargol even in non-prostatic cases, maintaining that the protargol is sufficiently germicidal to protect the bladder. I personally am inclinded to look askance upon such measures, believing that it exposes the patient to unnecessary complication. Nevertheless, I must admit that throughout years of experience with this man I found no ill effects following this procedure.

In early anterior urethritis it is my practice to endeavour to abort the condition by daily anterior irrigations of protargol, either by patient or physician. With a rubber-tipped urethral syringe the patient is directed to inject protargol four times daily, holding the same in for a period of four minutes. If there be any burning with micturition due to hyperacidity he is given a mildly alkaline

diuretic to be taken per mouth. A large proportion of anterior cases can thus be aborted in ten days.

In prostatic cases the patient carries out treatment identically the same. Private ambulatory cases are required to report every three days for prostatic massage followed by bladder irrigations of one half per cent. protargol. In institution life where such cases are more readily controllable, such treatment can be given every two days, without danger of producing orchitis or other complication.

Such treatment, however, should be based upon microscopic findings with suitable alterations to meet the individual case.

It is quite unnecessary to discuss here the various complications other than prostatitis. Orchitis, epidymo-orchitis, seminal vesiculitis, gonorrhœal rheumatism, peri-urethral abscess, prostatic abscess and stricture, all demand special treatment, but a good working knowledge with remarkably good results can be obtained from the above mentioned technique.

Vaccines of course have their uses. In gonorrhœal rheumatism, they, preceded by a course of serum, yield excellent results. I have also found them invaluable in the mixed infections of chronic gonorrhœa.

Syphilis. As to syphilis little need be said. With the excellent facilities offered by our various provincial health Laboratories, one can and should obtain a reliable Bordet-Wassermann reaction on every syphilitic or suspectedly syphilitic case. The Wassermann reaction should likewise be repeatedly utilized, suitable treatment having been given, before a case should be pronounced cured.

As to anti-syphilides I should name among the arsenicals the following preparations in the order of their efficiency: salvarsan, kharsivan, diarsenol, galyl, arsenobillon, the various "neo" modifications, "sub-salvs" (a rectal suppository of salvarsan).

Prophylaxis. And now, permit me a word with regard to prophylaxis. Two general methods are at present followed:

1. The establishment of preventive depots (at present for the military only) where patients may present themselves even within a period of from eight to ten hours following exposure, with excellent chances of arresting the disease.

2. Prophylactic packages containing urethral instillation of 20 per cent. protargol, and a jar of 30 per cent. calomel ointment; such contents to be used immediately before exposure.

The latter is undoubtedly the more effective method. Such packages have for years been issued to United States sailors and marines when applying for shore leave. The occurence of venereal diseases has been thereby reduced to a fraction of one per cent. Similar experiments attempted both in Canada and in England have yielded equally favourable results.

With the clinical facilities at our disposal, with the intelligent co-operation of the profession, with the adoption of scientific methods of combatting these diseases, and the rigid enforcement of our new Ontario Venereal Diseases legislation, I believe that ten years will show a remarkable depreciation in the occurrence of these maladies, and twenty-five years will render them comparatively rare.

In conclusion might I suggest the establishment of a long felt want in the Canadian Medical Association, viz: a Section on Skin and Genito-Urinary Diseases. Such a Section would do much to arouse renewed interest in venereal diseases, and would prove an excellent educative factor as well.

The medical departments of Harvard University, Columbia University and Johns Hopkins University, have been left a residuary estate estimated at between $6,000,000 and $10,000,000 by Captain Joseph Raphael de Lamar, capitalist and mine owner, who died December 1st. The object of the legacy is to provide funds for the study and teaching, or the origin and cause of disease, and its prevention. The study and teaching of dietetics is also demanded. Captain de Lamar told in detail his wishes with regard to the uses of the residuary funds. They are to establish fellowships, scholarships and professorships, and are to be used for the construction and maintenance of laboratories, clinics and dispensaries. The result of the study of dietetics and the effect of different foods and diet on the human system, are to be made the subjects of public lectures, and are to be published for the use of the general public not in scientific publications only, that the people at large may have the benefit of such research.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS

By Eugène Grenier, M.D.

Montreal

WHENEVER anyone speaks to me of artificial pneumothorax the first question is invariably the same—*What results do you have*? I admit that question is interesting and practical. This is why, in February, 1916, at a meeting of the *Société Médicale de Montréal*, I endeavoured to satisfy the wishes of some physicians, by reviewing about eighteen hundred cases treated by artificial pneumothorax in Italy, Switzerland, Belgium, Denmark, France, United States, and Canada. Although at that time I had practised Forlanini's method for about two years, I did not include in this review any cases subjected by me to this treatment, because I had then realized that artificial pneumothorax is a delicate undertaking, its success depending on the skill of the operator. This decision I arrived at subsequent to making public in August, 1915, an analysis of the immediate results on nineteen cases. Now that I have made a couple of thousand insufflations, I prefer not to discuss them, but to treat of adhesions as an obstacle we meet frequently when inducing pneumothorax.

Pleural adhesions exist nearly always in pulmonary tuberculosis; when of recent age, they are, as a rule, elastic, when of long standing, usually difficult to distend. Before trying to induce pneumothorax, it is important to know of their existence and location. This is not easy. Knowing that the motions of the thorax are very restricted at the apices, we can assume that infiltrations developing there cause adhesions; the clinical forms of the disease, such as post pleuritic or fibroid tuberculosis leads us to the same conclusion; these deductions are made from our general knowledge and from the previous history of the patients, but the physical examination gives us many other details.

The inspection of the patient made in front, first, during

Read at the forty-eighth annual meeting of the Canadian Medical Association, June 13th, 1917.

a natural breath, second, during a forced breath, permits us to view flattenings, supra- or infra-clavicular, unilateral, or bilateral. If the patient is not in the last stages of the disease, these hollows are interpreted as being due to underlying adhesions. A retraction located at the base of the chest also suggests pleural adhesions; which is often accompanied at the same level by lagging. However, we must remember that active inflammation also causes a diminution of motion.

Profile inspection reveals sometimes during a deep breath a depression at the inferior spaces, suggesting pleural adhesions at the base of the lungs. In the back, inspection gives very few useful particulars. Many authors say that palpation assists us materially in locating adhesions. Muscular tissue overlying adhesions is of a doughy, lifeless consistency.

The vocal fremitus is also diminished, but this sign loses its value when the voice is impaired, and this fremitus varies in intensity with the thickness of the muscles and the adipose tissue; also, in women, it is naturally weak and sometimes absent.

Thin adhesions do not modify percussion sounds, but when they are thick the intensity is diminished and the tissues present pronounced resistance to the finger.

In auscultation, adhesions enfeeble the respiratory murmur; this diminution, associated with cogwheel respiration, indicates adhesions following pleurisy, but, if accompanied by rough respiration, it reveals, in addition, underlying fibroid lesions.

This paper would be incomplete if we neglected to consider *x*-ray findings. The fluoroscope shows us a well-pronounced shadow spreading to the diaphragm. Is this an adhesion? It is possible. Is it resistant? Perhaps. The radiographic plate reproduces the shadows, often superimposed. The stereoscopic plate brings out, in relief, the fine subdivisions of the bronchial tree visible through a cloud almost as far as the thorax. Have we adhesions at this level? Probably, replies the rœntgenologist, and the clinician, after a close physical examination, gives the same opinion. Information secured from the above methods is often incomplete and sometimes incorrect, but the physician practising artificial pneumothorax seeks them because his intervention is freer outside of the adhesion zone, and the danger of gas embolism is avoided.

Figure 1 illustrates a right lung in course of compression. From the central black spot there appear stringy shadows in the form of a fan; these are elastic adhesions. Intervention here was relatively easy as we were fortunate in penetrating outside their

POSTERIOR VIEW—RIGHT LUNG

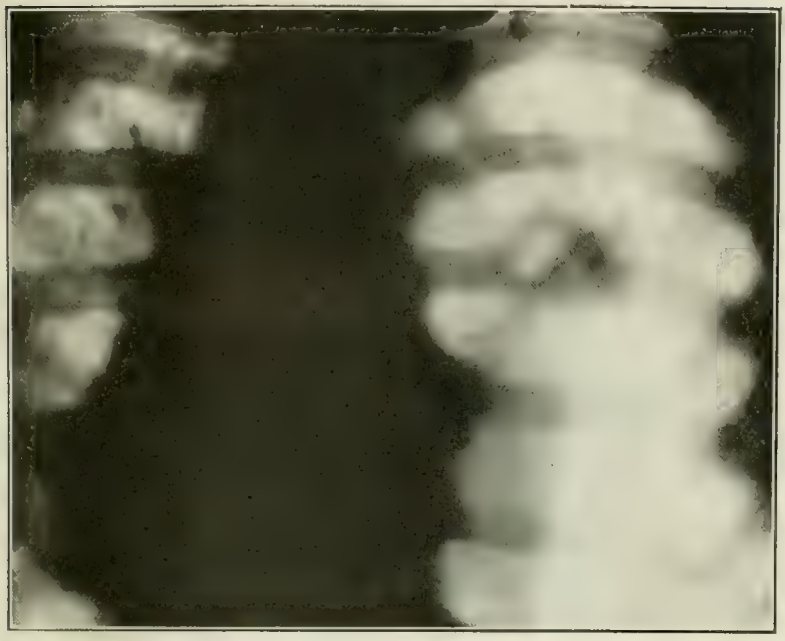

FIG. 1 -From the central black spot there appears stringy shadows in form of a fan; these are elastic adhesions.

POSTERIOR VIEW—RIGHT LUNG

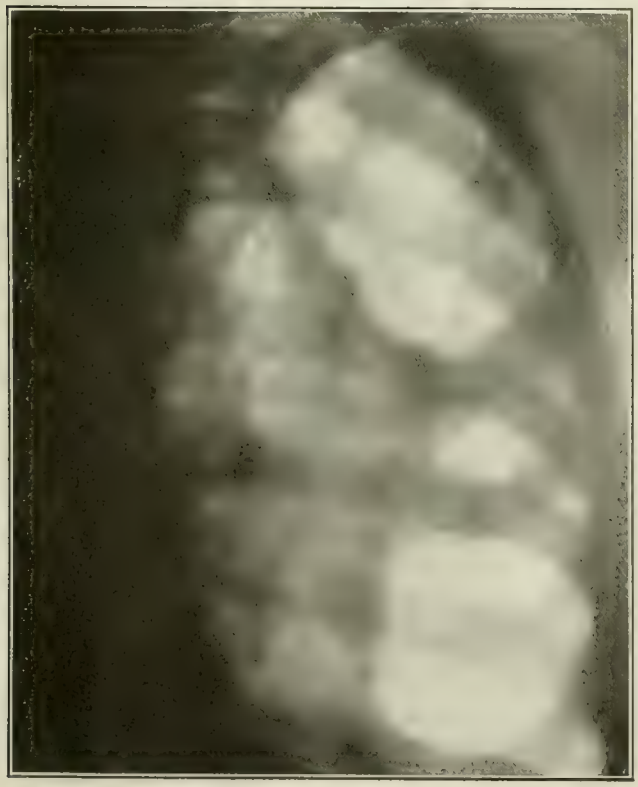

FIG. 2—In face of hard adhesions, we established two air chambers.

Posterior View—Right Lung

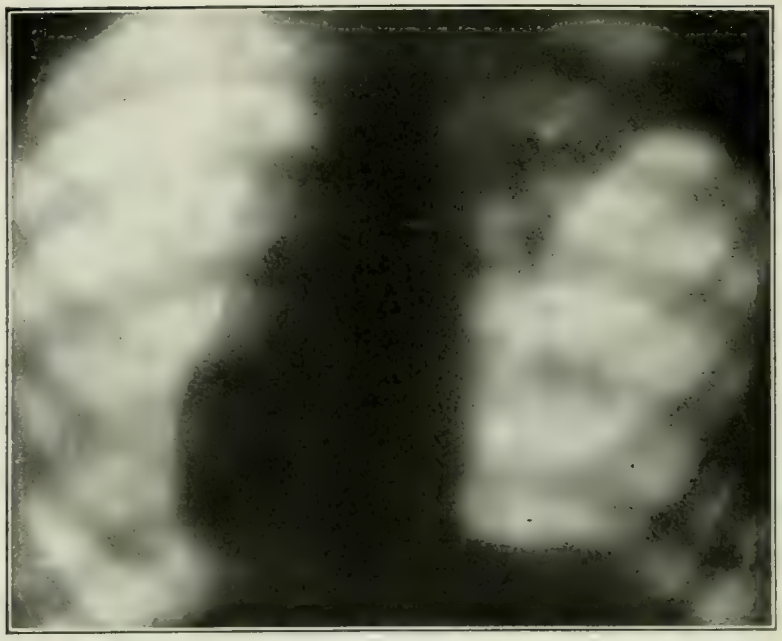

Fig. 3—Distended strings of adhesions extending from the diaphragm to the ribs.

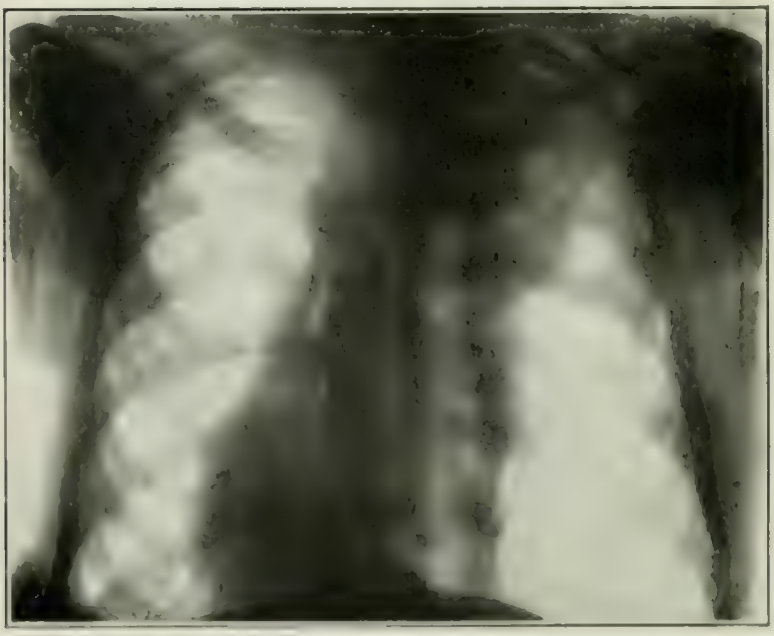

Fig. 4—Right lung in course of compression

zone, but had we met with hard adhesions, our efforts would not have ceased there, for with perseverance we can succeed in establishing compression.

Figure 2 represents the right lung of another one of our patients—in the presence of hard adhesions, we were successful in establishing a small air chamber in the superior part of the thorax—several days later we did likewise at the base; the adhesions then gave way and when this radiograph was taken, the air chambers were communicating.

We proceeded in a similar manner in Figure 3, in which we see distended strings of adhesions extending from the diaphragm to the ribs. Here the pleura is thick and the puncture difficult to make. The diaphragm is high, and the oscillations of the manometer were hard to interpret.

Figure 4 shows us a right lung in course of compression,—we succeeded in avoiding adhesions when making each intervention.

In resumé:—Seek by all means to localize adhesions, if any exist; then, to avoid danger and pain to your patient, make your intervention outside of their zone. If this is impossible, do not abandon this mode of procedure without trying to establish several air chambers in an endeavour to overcome the resistance of adhesions.

In a recent bulletin of the Canadian Army Medical Corps, Major Harold Orr is officially given credit for devising one of the most effective methods of killing trench lice. Major Orr, while captain and sanitary officer of the Shorncliffe area, conducted a series of experiments in infestation. Professor Nuttall, F.R.S., advised Major Orr to continue his experiments on a larger scale and authority was obtained to build a hut for this purpose. So successful has Major Orr's device proved that "Orr's Huts" are now to be employed throughout the British army overseas.

THE EYESIGHT OF THE NEGROES OF AFRICA

By J. N. Roy, M.D.

Physician to the Hôtel-Dieu, Montreal;
Late special delegate of the Canadian Government;
Laureate of the Academy of Medicine of France

DURING a recent tour of study throughout the Dark Continent, where I visited twenty-two different colonies, I had the opportunity of examining the anatomical, physiological, and pathological condition of about five thousand negroes of one hundred different tribes; and it is the result of my researches on their eyesight that I intend to report in this paper.

After dealing with the question of refraction, vision during the day and night, and accommodation, I will briefly compare the eyes of the blacks with those of the other races of the earth.

In my work, I used the de Wecker's chart—built on the same principle as the Snellen's types—in which the smallest characters are normally perceived at the distance of five metres. My subjects being illiterate, I had to use the special chart made up of a certain number of squares of different dimensions, where one side left out represents the opening of each square. In this way my examinations were very simple and precise. Even the least intelligent could easily indicate with his hand the opening of the squares.

I used skiascopy for the refraction. Under the circumstances the difficulty of transporting the ophthalmometer would not have been repaid by the services obtained from it.

The African light is very bright, and the atmosphere very clear. Experiments led me to the conclusion that vision in the same person is better in Africa than in Europe. An emmetropic eye which, in the northern countries, has with good light a vision of 5–5 or even 6–5, can see in Africa one metre farther away, *i.e.*, a vision of 7–5. This unity of 7–5 will, in this paper, be considered as the normal vision of a European in Africa or in the tropical countries.

A glance at the geography and ethnology of the Dark Continent shows that the different races came in contact according to

certain circumstances worth mentioning. The negroes of the Senegal Soudan intermarried with their neighbours of the north, the Berbers and the Arabs; and their offspring, the Moors, peopled chiefly Mauretania. Those of the north-east were gradually absorbed by the Egyptians who were always at war with the Ethiopians; and their union with the Fellahs gave origin to the race of the Peuhls and the Foulahs, who live in the neighbourhood of the Senegal river, the upper part of the Niger, and in the Fouta Djalon in French Guinea. The Arabs of Yemen made repeated incursions into Africa, crossed the coast of Somalis, and reached Harrar the capital of the country of Gallas in Abyssinia, where they remained in possession for a long time.

The negroes who came in contact with these different races inherited from them many diseases, chiefly syphilis and trachoma. I shall, at a later date, take the opportunity of dealing with this question of syphilis on that continent. Smallpox also made terrible ravages, chiefly where the means of communication are naturally easier than in the wild forest. The same may be said of purulent ophthalmia. In a general way the eyes of the people living north of the fifth degree of latitude north are not so good as those living south, on account of the lesions due to purulent ophthalmia, variola, trachoma, and the constant irritation of the sand.

Strabismus, due usually to corneal scars, or amblyopia from other sources, is also more frequent in the northern part.

I made a complete tour around the African continent, penetrating at many points even to a great depth. My conclusions are in a word that the people of the south were first infected by those of the north, who in turn had been contaminated by the Indo-Europeans.

It would be outside the sphere of this paper, even from the point of view of the union of races, and the resulting contagion, to deal at length with that continent which in the past probably bound Asia and the south of Africa, and of which the islands of the Soude are the vestiges. The Hottentots and the Bushmen with their Mongolian blood are a living proof of this hypothesis. The last descendants of these tribes, almost extinct nowadays, live grouped together chiefly on the frontier of Rhodesia, German South-West Africa, and the Portugese Angola.

Upon close examination of the eyes of the negroes, one is astonished at the considerable amount of pigment contained therein. At times it is even found on the ocular conjunctiva opposite the external canthus. The iris and the choroid are saturated with it,

and even in certain cases there is a physiological condition of melanosis of the soft palate and of the gums.

Refraction shows that their eyes are almost all emmetropic, provided there is no alteration of the cornea due to previous diseases. My statistics have given me the following results: Simple myopia is found in the proportion of about 1·5 per 100, and then it is always of a mild degree. I never had to use a glass higher than four diopters, and this was with albinos. In passing, it is worthy of note that this pigmentary anomaly is far more frequent in Africa than elsewhere. In Nigeria I saw a family of the tribe of Yorubas composed of five children, one dark, and four albinos. It would have been interesting to find out from the point of view of progeny, if the albinos intermarried; but, in spite of a most careful inquiry, it was impossible to establish that fact on account of the way they are treated in their own villages. At places they have no prestige; at others they are considered as unlucky; while sometimes they are sacrificed at birth, or regarded as fetish.

Myopic astigmatism is found in about the same proportion as simple myopia, *i.e.*, 1·5 per 100; and I never had to use a cylinder higher than $-2{\cdot}5$ to correct the error.

There is an absence of keratoconus and keratoglobus in Africa.

Simple hypermetropia and hyperopic astigmatism are found in about 2·5 per 100. The highest degree of hypermetropia was corrected by a sphere of $+3{\cdot}5$, and astigmatism by a $+2{\cdot}5$ cylinder. I saw but few cases of compound astigmatism, and those chiefly among albinos. I never had a case of mixed or irregular astigmatism.

All these percentages are based on cases with absolutely transparent corneas. It goes without saying that alterations of the cornea due to diseases are met with in Africa as elsewhere. These percentages are based on an average of the whole continent. Where schools of instruction have long been established, they may be too low; but at places where almost every one was emmetropic, they are certainly too high. Practically all cases of ametropia were corrected by very weak glasses.

In a general way, I have been surprised at the excellent eyesight of the negroes. In rare cases, I have even observed that a correction of two to three diopters of either hypermetropia or myopia could improve their vision up to 9–5 and even 11–5. The highest normal vision recorded was one of 20–5, and this was in a man affected with sleeping sickness. I shall, in a later paper, deal with this disease, and show the great resistance of the negroes' eyes to the human trypanosomiasis. My statistics show that the

average vision of the natives of Africa is 12–5. More than any other race have they the faculty of seeing to a great depth in water. In spite of the most careful researches, even in eyes suffering from diseases, I have never observed any alteration of the colour vision or hemianopsia.

It is with pleasure that I mention my gratitude to our confrères of all nationalities with whom I came in contact. Their organization of all kinds have been a great help to me in my researches.

The negroes have a great power of vision in the dark. I made a series of experiments to compare their sight at night with ours. The subjects, both Europeans and natives, were first refracted, and all ametropic or diseased cases were eliminated. To be understood by all, I had to proceed in the following simple manner. I made with white paper certain figures representing a square, a cross, or letters like L. I. V. T., etc. These figures were placed on a black-board. The group to be examined stood far from these objects, the Europeans on the right, and the natives on the left. A period of one minute was allotted at each distance. If at the end of that time none of the group could see, all moved forward one step, and so on. When any one could recognize the object, he was led aside and had to describe in some way the figure seen. If he was right, the distance at which he could see was measured; if not, he had to rejoin the group. In this way, I calculated the distances at which everyone could recognize the object. I repeated the test with the different figures. My experiments, repeated frequently and at different places, show that the negroes see at night from two to four times better than the whites. Admitting this fact, what is the explanation? A number of enucleations have given me the material for histological researches, chiefly on the retina. The comparative anatomy of the eye shows that it is in the rods of the retina one finds the difference between the diurnal and the nocturnal animals.* Schultze had expressed the opinion that the latter had no retinal cones. Later this was found to be erroneous, as most of the reptiles which are nocturnal, have more cones than rods. Up to now the only difference found is that the nocturnal animals have longer and thinner rods than the diurnals. I paid special attention to the examination of the retina. Unhappily the histologists I consulted found nothing new

* J. N. Roy—"Anatomie et physiologie comparées de l'œil et de ses annexes." —*Archives d'Ophtalmologie de Paris*, Juillet-Août, 1912.

on the subject. There was a larger amount of pigment in the eyes of the negroes than in those of the whites; but the rods in both races have the same form. We are forced to believe that their excellent vision in the dark is due to their greater use of their eyes at night compared to us. I have noticed the same thing with the Indo-Chinese, the Malays, and Redskins, whose vision at night is very good; and even among the Hindoos, whose origin is Aryan.

I paid particular attention to their power of accommodation. It was easy to have positive facts on account of the presence, at different places, of scholars who could read fairly well. My researches on the subject show that the natives of the Dark Continent have a better power of accommodation than the whites, according to the standard given by the figures of Donders which I will discuss later on. A study of a series of fifty observations from my statistics shows without doubt the existence of this superiority, and, besides, corroborates all our previous statements. These observations are practically alike, and were all made on emmetropic cases. To get the *punctum proximum* I used the smallest characters of the de Wecker's chart. The optometer with thread would have given results hard to control.

Observation	Sex	Tribe	Age	Amplitude of Accommodation	Emmetropic Vision
1	man	Ouolofs	16 years	0·07 cent. = 14·28	14–5
2	"	"	18 "	0·082 " = 12·19	12–5
3	"	Bambara	17 "	0·08 " = 12·5	13–5
4	"	Mandigue	29 "	0·107 " = 9·34	12–5
5	"	"	15 "	0·068 " = 14·7	10–5
6	"	Bambara	20 "	0·085 " = 11·76	15–5
7	"	Malinke	22 "	0·088 " = 11·36	12–5
8	"	Soussous	24 "	0·09 " = 11·11	12–5
9	"	"	30 "	0·103 " = 9·7	11–5
10	"	"	23 "	0·09 " = 11·11	12–5
11	woman	Fantis	14 "	0·067 " = 14·92	16–5
12	"	Apollonienne	14 "	0·07 " = 14·28	12–5
13	"	Fantis	13 "	0·065 " = 15·38	15–5
14	"	Accra	15 "	0·072 " = 13·88	11–5
15	"	Achantis	22 "	0·084 " = 11·9	9–5
16	"	"	18 "	0·077 " = 12·98	14–5
17	"	Yorouba	29 "	0·106 " = 9·43	11–5
18	"	Ibos	20 "	0·088 " = 11·36	14–5
19	"	Egbas	22 "	0·08 " = 12·5	15–5
20	"	Yorouba	25 "	0·102 " = 9·8	10–5
21	man	Minas	23 "	0·085 " = 11·76	14–5
22	"	"	23 "	0·08 " = 12·5	17–5
23	"	Evhe	25 "	0·087 " = 11·49	18–5
24	"	Dagomba	19 "	0·07 " = 14·28	11–5
25	"	Fons	19 "	0·075 " = 13·33	10–5
26	"	Bassa	23 "	0·073 " = 13·69	14–5

Observation	Sex	Tribe	Age	Amplitude of Accommodation	Emmetropic Vision
27	man	Malumba	21 years	0·07 cent. = 14·28	15–5
28	"	Kumba	24 "	0·082 " = 12·19	13–5
29	"	Malumba	21 "	0·074 " = 13·51	10–5
30	"	Bassa	18 "	0·07 " = 14·28	12–5
31	"	Loango	16 "	0·07 " = 14·28	10–5
32	"	Yacoma	13 "	0·067 " = 14·92	13–5
33	"	Batetela	16 "	0·065 " = 15·38	10–5
34	"	Azande	15 "	0·075 " = 13·33	12–5
35	"	Bangala	16 "	0·075 " = 13·33	11–5
36	"	Yacoma	15 "	0·07 " = 14·28	15–5
37	"	Basonge	14 "	0·065 " = 15·38	11–5
38	"	Bangala	14 "	0·068 " = 14·7	12–5
39	"	Bakumu	15 "	0·075 " = 13·33	10–5
40	"	Basoko	14 "	0·062 " = 16·12	12–5
41	woman	Baluba	14 "	0·068 " = 14·7	12–5
42	"	Mongo	18 "	0·074 " = 13·51	11–5
43	"	Yacoma	17 "	0·07 " = 14·28	15–5
44	"	Basoko	15 "	0·066 " = 15·15	17–5
45	"	"	20 "	0·08 " = 12·5	10–5
46	"	Bangala	14 "	0·06 " = 16·16	13–5
47	"	Bapoto	16 "	0·065 " = 15·38	12–5
48	"	Mongo	16 "	0·068 " = 14·7	14–5
49	"	Basoko	19 "	0·07 " = 14·28	11–5
50	"	Loango	15 "	0·063 " = 15·87	10–5

If we compare these figures with those of Donders' chart, we see to what point the amplitude of accommodation in the negroes is superior to that of the whites, although I must say that the difference is not so marked as it looks. I regret very much I had to limit my researches to the period of life between thirteen and thirty years. Younger than that, my subjects could not read sufficiently to give definite answers, and after I could not trust their age. The negroes cannot give exact answers about their birthday. At times they will mention a certain number of years before or after a definite event in the history of their country, and from this event, as well as we know it, we have to deduce their age. I regret it so much more as it would have been interesting to know when presbyopia develops among them. However, our limited statistics, with subjects whose age was well known, show that it develops a little later than in the whites. It is but logical on account of their excellent power of accommodation, and the rarity of latent hypermetropia. This fact is worth mentioning because, according to some authors, among whom are H. Campbell Highet of Singapore, and J. Santos Fernandez* of Cuba, who have made

* J. Santos Fernandez.—"Influencia del clima de la Isla de Cuba en las enfermedades de los ojos"—*Cronica Medico-Quirurgica de la Habana*, September, 1893.

"La presbiopia en la Isla de Cuba"—*Cronica Medico-Quirurgica de la Habana*, Mayo, 1898.

some experiments in their own country, presbyopia would appear from five to six years sooner in the tropics than elsewhere, and this not only among the Europeans who have been residents for a certain time, but also among the natives. According to them, the high temperature causing a generel depression of the organism, and indirectly a diminution of the power of accommodation, would explain this phenomena; besides the way of living and the feeding of these different people could also have something to do with this condition. It is not so with the negroes. Moreover, I must say that the population of Singapore is composed of many nations in which the yellow element represented by the Chinese, the Japanese, and the Malays predominates. In Cuba there are Spaniards, Creoles, Chinese, Americans; and the other residents have lost, either as a result of their prolonged stay, or through intermarriage, a part of the characteristics of their own race. These anæmic white or yellow peoples, often affected by malaria, or born from diseased parents, are from every point of view far less resistant than the blacks, whose organism by heredity is used to the life in the tropics.

In Africa I was surprised at the excellent power of accommodation compared to the figures of Donders, and upon my return to Canada, I thought it would be interesting to make a control test of these figures. From schools of both sexes, and from my private and hospital practice, I examined a great number of persons of different origin whose ages varied from ten to sixty years. My results lead me to say that the amplitude of accommodation among the whites is greater than the Donders' chart would show. In these experiments the de Wecker's chart was used and the patients were asked to read, with one eye at a time, the smallest characters at the shortest distance. My conclusions are as follows. From ten to fifteen and from fifty to sixty years, my figures correspond to those of Donders; from fifteen to twenty there is an increase in the amplitude of accommodation of one diopter; from twenty to thirty, of two diopters; from thirty to forty, of three diopters; from forty to forty-five, of two diopters and from forty-five to fifty, of one diopter. Emmetropic cases only were examined, as the myopics and the hypermetropics would have given results either higher or lower than the Donders' chart which represents only the physiological accommodation.

If we examine, in a general way, the vision among the different races of the globe, we see that it varies greatly in individuals of the same origin. To avoid repetitions, and especially to remain on purely scientific grounds, I shall divide, as I did in a paper on Ozœna,

delivered before the French Congress of Oto-Rhino-Laryngology, in May, 1914,* the different peoples of the earth, from an ethnological standpoint, into three large families: the white, the black, and the yellow. Indeed, if we consider carefully the characteristics of the Malays and the Redskins, we find that the representatives of those two races have had the Mongolians for ancestors. The colour of their skin, the shape of their eyelids, the development of their malar bones, the flattening of the base of their nose, the thickness of their hair, and generally speaking, their facial expression, are all arguments in favour of this theory. Moreover, we find in the language of certain Indian tribes of South America, a number of expressions very similar to some Japanese words; and in Mexico, ruins of temples have been found with symbols which are undoubtedly vestiges of those who adorned the shrine of Buddha.

It is not my intention to speak at length of the vision of the whites, it is too well known for that; I will simply point out the most interesting facts not yet mentioned, and the results of my observations when their blood is mixed with that of negroes or of Mongols.

It is admitted that in Europe the errors of refraction depend on the races, and on the degree of instruction; and, as an example of that, we see that myopia is more frequent in Germany than elsewhere, while the Latins, and chiefly the Anglo-Saxons, in spite of their refined and advanced culture, are less predisposed to it. The same is noticed among the yellow peoples, not only of Asia but where ever else my many trips have permitted me to study it locally.

Myopia, quite frequent in Japan and China, is met with almost exclusively among the educated class; and, in spite of what certain authors say, it is not a national defect. Hypermetropia is met with a little more frequently.

The Malays, Philippinos, Hovas, Esquimaux, Laplanders, and the Redskins are like the negroes, almost all emmetropics; and Steiner† has the same opinion of the population of Java.

My statistics on the ametropia of the mulattoes and the half-breeds show that the vision in both has about the same characters. Seventy-five of the refracted cases among the mulattoes are astigmatic. In detail, the percentage is as follows: 50 per cent. of

* J. N. Roy.—"Ozœna among the various races of the earth."—The Canadian Medical Association Journal, September, 1917.

† L. Steiner.—"Coup d'œil sur 3104 cas de maladies des yeux chez les Malais" —*Geneeskundig Sydschrift* voor Ned. Indie, xxxvi., I.

hypermetropic astigmatism both simple and compound, 25 per cent. of myopic astigmatism simple and compound, 20 per cent. of hypermetropia, and 5 per cent. of myopia. Dr. Jones* of Newport News, Virginia, in a paper on the refraction of the half-breeds, comes to the same conclusion. His figures show 78 per cent. of astigmatics, of which 51 per cent. is of the simple or compound hypermetropic type, and 27 per cent. of the simple or compound myopic one. There is 19 per cent. of hypermetropia and 3 per cent of myopia. The word Indians in this paper means half-breeds only. It does not include the Redskins, for nowadays these are seldom met with in their pure condition. To study them carefully, one has to go, as I did, to Mexico or to Central or South America.

No irregular or mixed astigmatism was found among the mulattoes or the half-breeds, and all the corrections were of a slight degree.

Some authors have put forth the opinion that the depth of the orbit might have some influence on the development of the eye in its antero-posterior diameter and, consequently, upon the refraction. To deep orbits would correspond myopia, and to shallow ones, hypermetropia. Moreover, they think that the orbital diameter is in relation with the shape of the head, and that the more dolichocephalic is the cranium, the deeper is the orbit, and vice-versa. We know that in a general way, the yellow peoples are more or less brachycephalic, the whites mesoticephalic, and the negroes almost all dolichocephalic. My prolonged studies among the main races of the earth have shown me the falsity of this theory. Outside of the anomalies of refraction, due to abnormal curvature of the lens, or to previously existing diseases, which, by softening the posterior segment of the eye, alter its antero-posterior diameter, there is no rule to explain the causes of ametropia other than direct heredity. These hereditarily weak eyes succumb to the effect of fatigue brought on by delicate work, corneal lesions, defective light, and the constant use of poor printing. Moreover, according to Broca's measurements of the orbit, the Dutch with their shallow cavities are frequently myopics, while the Esquimaux with their large orbits are almost all emmetropics.

The vision of the different peoples is also proportionate to their intellectual development. Taking the white race as a point

* C. P. Jones. "A study of one hundred refraction cases in Indians fresh from the plains." *The Journal of the American Medical Association*, July 25th, 1908.

of comparison, we see that the eyesight of the Chinese and the Japanese is similar to ours; and of all the different branches of the yellow race it is the worst. The Esquimaux and the Laplanders, living in the northern countries, are next in the scale with a vision superior to that of their ancestors. The Philippinos, Hovas, Malays, and the Redskins have still better sight.

Warm climate seems to have a certain influence on the development of the ocular pigment. In individuals of the same race, born in different places, more pigment is met with in the tropics than in the cold countries. As a result of this there is a larger absorption of light rays, and an improvement of the sight, although I must say that the intensity of the light plays a great part.

Studying the moral and the physical condition of the mulattoes and the half-breeds, we find that they inherited from the whites all their defects and even their pathological atavism. When the good qualities exist—which is exceptional—they are always poorly developed. Their eyes are not so good as those of the Redskins and the negroes, but may be compared to ours.

The power of accommodation of the yellow race is as in the whites, superior to the figures of Donders. My statistics show it about equal in both races. The same may be said of the mulattoes and the half-breeds.

In concluding, let me once more call to your attention the marvellous visual apparatus of the negroes, as compared with that of the other peoples who live in a more or less primitive state, or who have reached the highest degree of civilization. After careful researches, I came to the conclusion that the higher the human being rises in the social scale, the more his brain develops at the expense of the organs of sense, chiefly of vision and of hearing, both of which can be estimated mathematically.

For the whites, their mode of life has a deleterious influence on their physique. The hygiene of the sight and hearing is defective on account of the use of strong artificial light and injurious noises. Diathesis is transmitted from generation to generation. In general, feeding is too heavy and too rich. Excesses of all kinds ruin the organism, and the needs of instruction require prolonged and tiresome studies.

None of these are found among the natives of Africa. They live the simplest life required by the most urgent needs of nature, and they have no ambition. Of all human beings, the blacks are without doubt the ones representing the lowest step of civilization.

Their eyes and ears are developed to the highest possible degree of physiological function. Next in the scale are the yellow peoples of the Islands of Oceania, then those of Indo-China, the Redskins of Mexico, of Central and South America, the Laplanders, the Esquimaux, and lastly, the Chinese and the Japanese. The whites are the last in the scale with a poor vision, compared to the other races, and even among them, it is influenced, as I have said previously, by the degree of instruction and heredity.

The ocular pigment seems to have a definite influence in the perception of the objects, and I believe that in the negroes, it is one of the main agents of their excellent vision. It absorbs some rays of light and neutralizes the ones that are irregularly reflected on the retina.

With the civilization brought to them by the Europeans, who now control almost the whole of Africa; with their mode of living changed chiefly in the increased absorption of a more or less adulterated food and of alcoholic beverages—which nowadays they even make themselves—with the advance of instruction in schools and workshops; with at places the use of artificial light, it is a question how long these natives will keep up their visual power, at present so perfect.

To the great regret of the medical profession and of the public, it has been decided not to publish at present and as a separate work, the history of the medical aspect of the Halifax disaster, completed by Professor Fraser Harris early last summer. It is understood that it will be incorporated in a report to be drawn up by the Relief Commission at the conclusion of their labours. This report may not be ready for a year or more from the present date.

CLINICAL NOTES ON THE INFLUENZA EPIDEMIC OCCURRING IN THE QUEBEC GARRISON

By E. A. Robertson, M.D., *Captain C.A.M.C.*
Ottawa

SPANISH influenza was brought to Quebec in September by a party of American sailors recruited from many different parts of the United States. They were chiefly whites, but there were negroes and creoles among them. Although this party, which numbered six hundred, was promptly quarantined, sufficient contact was made with soldiers in the same building to introduce the disease into the garrison, and with marvellous rapidity it developed among the soldiers and the civilian population.

As medical officer in charge of medical wards of the military hospital and the soldiers wards of the Jeffrey Hale Hospital, a great many cases came under my care, and although, under the stress of additional work caused by the sickness of many of the staff, I was unable to give as much time as would have been desirable to the clinical study of individual cases, I wish to describe as best I may the disease as it appeared in Quebec.

The usual types of influenza were noticed, viz: (1) The mild type with chilliness, fever, general aching of head, back, and limbs, coryza and conjunctivitis, slight sore throat and prostration.

In these cases high temperature of a variable type running to 103° or 104° lasted from three or four days to a week and fell by lysis and there were no complications.

2. The severe type with pulmonary complications causing a rather high mortality.

3. The gastro-intestinal form, with nausea, vomiting, and diarrhœa as initial symptoms. These cases were few and were almost always associated with pulmonary symptoms of great severity.

4. The phthisical type. I noticed two cases, possibly, of this kind and it is yet too soon to be sure that they are not cases of ordinary tuberculosis of the lungs.

Of these four classes I may dismiss the first form with a few words. The symptoms differed but little from mild endemic influenza. Albuminuria, however, was noted in about 15 per cent. and epistaxis was not uncommon.

The second class deserves more attention. Most of these cases had been sick for several days or a week before entering hospital and were in a critical condition with pulmonary complications already present. Some others had only been sick a day or two and gradually developed bronchitis and broncho-pneumonia. Very few showed any abrupt onset as would occur in lobar pneumonia. A moderate percentage after several days of high temperature with but little cough suddenly developed a pleurisy which rapidly spread to the underlying lung and ran the ordinary course of a broncho-pneumonia.

While of course each severe case differed in detail from every other I will attempt to describe a typical example:

When first seen the patient was drowsy and stupid, hard to rouse, irritable and with a depressed expression. The face was flushed, the nostrils were blocked, and breathing was oral. The tongue was heavily coated with thick whitish fur at the edges, with a brown centre. The lips were dry and often covered with secretion or with herpes, and they were slightly blue. The throat was dark red and the mucous membrane covering the pillars of the fauces and pharynx swollen. The breath was of a peculiar feverish throaty odor. The voice was husky. The skin was hot but moist. No rash was visible but the capillary circulation was increased, as shown by a decided flush. The temperature was 103° or 104,° the pulse below 100 and the respirations 24. Physical examination of the lungs showed bronchial breathing general over both lungs. The urine contained albumin and quantities of bacteria. The predominating organism was one resembling at first glance the staphylococcus pyogenes aureus but which Captain H. Morell, the bacteriologist of the military hospital, considers as a diplococcus with close affinity to the diplococcus pneumoniæ. The sputum was greenish yellow or stained with dark blood, thick and tenacious. It contained the same organism. The subjective symptoms were extreme weakness, severe headache and backache, aching of the limbs and pain in the abdominal muscles from coughing. As time went on coughing became more productive, quantities of blood stained expectoration or nearly pure dark blood were expelled, the respiration became rapid and laboured, the face and fingers cyanosed, active delirium came on,

the patient was with difficulty kept covered and often tried to get out of bed. Prostration became more marked, the tongue dry and brown, the whole surface of the body blue, the temperature rapidly fell and the patient died from failure of the respiration. The signs of a spreading broncho-pneumonia were usually evident early in the disease.

While this may serve as a description of a typical case, there were others which presented peculiarities of their own. I will now bring to your attention a few particular cases.

A. B. was admitted to the Jeffrey Hale Hospital with nausea and vomiting of blood, severe abdominal pain and diarrhœa. His temperature was 103° and pulse 96, respiration 28; he was restless and excited, but not delirious. He rapidly became profoundly toxic and died within twenty-four hours after getting out of bed and having a profuse bowel movement on the floor. Signs of broncho-pneumonia were found in the lungs. Another case was admitted to Jeffrey Hale Hospital with profuse epistaxis. He became extremely weak, his temperature fell below normal, and he died within twenty-four hours although his hæmorrhage had been checked. I did not see this case myself, but I was given a description of it by another medical officer.

An American officer was admitted with many of the typical signs of typhoid fever. His spleen was enlarged and he had rose spots on his abdomen and chest. He rapidly developed broncho-pneumonia with bloody sputum and epistaxis and died after two weeks' illness. His urine and sputum were loaded with the organism previously mentioned. Several cases presented laryngeal symptoms, voice was lost, and blood stained sputum brought up, while all signs and symptoms of involvement of lungs were absent.

Of the fourth variety I have seen only two cases which looked like the chronic form of influenza. It is too early to make a positive diagnosis. One patient, however, gives the history of a severe attack of Spanish influenza a month before he entered hospital. He came in spitting freely and stated that he had first noted blood in his stools and had vomited blood. The blood during his stay in the hospital, however, clearly came from the lungs, though it was not arterial or frothy but thick and dark. Great quantities of this were brought up and his condition became very critical. His pulse was frequent and he was much prostrated, while his temperature was high and very variable. There was evidence of cavity formation in the lower lobe of the right lung and thick sputum of purulent character streaked with blood was brought up. The

temperature still rises at night, no tubercle bacilli have been found in the sputum after frequent examination, though the organism mentioned previously is very abundant. Wth the history of a recent attack of Spanish influenza and the absence of tubercle bacilli in the sputum, it appears at least possible that this is a case of pulmonary infarction with destruction of a portion of the lung tissue and not of tubercular origin.

The other case was that of an American negro who entered hospital with a lobar pneumonia involving the whole right lower lobe. No crisis took place and his temperature is still variable with an evening rise. At one period I suspected fluid in the chest and did an exploratory paracentesis, but found no fluid.

There is still blood in his sputum and signs of softening in the right lower lobe, his sputum does not contain tubercle bacilli, but does contain the same micro-organism as the other cases.

In view of the fact that this epidemic differs in many respects from previous ones, notably in the prevalence of hæmorrhages from the various mucous membranes and in the very high mortality in those cases involving the lungs, it is fair to suspect that the Pfeiffer bacillus is not the only or even the main causative factor. It is probable that another micro-organism, perhaps not yet identified, is responsible for the present type of disease.

Before leaving this part of the subject I cannot refrain from drawing attention to the close resemblance between the severe cases and pneumonic plague as described in the text-books.

The frequency of hæmorrhagic symptoms is very striking. Of course the mortality is less and the plague bacillus has not been demonstrated. Still we must admit that we are faced with a very severe infection, and it is possible that some hybrid form of bacterial infection of peculiar virulence has been developed by the passage of the infective agent through the white, black, and yellow races which have been brought together during the war.

With regard to treatment I have seen no effect from the many drugs administered and I must confess that the recoveries seem due to the *vis medicatrix naturæ* rather than to any remedial agency. Treatment by serum would seem most rational. The chief hope in prophylaxis seems to lie in the production of an efficient vaccine. I must say that I believe more harm than good has been done by gargling and spraying with various so-called antiseptic solutions.

It is well known that spraying the nose and throat of a healthy individual with watery solution of chemical antiseptic, however bland, will cause hyperæmia and irritation after a few days' use.

Such a condition produces a fine field of culture for any active bacterium, while the antiseptic action can be merely temporary and in the intervals the mucous membrane will be more vulnerable than before.

In conclusion I must express my regret that owing to press of work, night and day, while many medical officers were sick, I and my colleagues in the military hospital have been unable to work out this interesting problem in the scientific way it should be done.

Mortality from tuberculosis among the civilian population and in the armies of all the countries engaged during the four years of hostilities, has at least approximated the total number of soldiers killed in battle, according to Dr. Livingstone Farrand, director of the American Commission for the Prevention of Tuberculosis in France. He states that 50,000 of the men called to the colours in the country's first draft summons were found to be tubercular. He declares that this is one of the striking conditions of the prevalence of the disease in the United States.

Dr. Hattie, medical health officer for Nova Scotia, estimates that the economic loss from unnecessary deaths in Canada is $150,000,000 per annum. Professor Irving Fraser, of Yale, estimates that the saving possible from better conditions of public health in the United States is far greater than $1,500,000,000 and may be $3,500,000,000. It is estimated on the highest authority, that in North America, 690,000 people are lost annually by deaths from preventible causes. These are appalling figures, even to-day, contrasted with the toll of life taken in Europe. Feeble-minded children cost America $90,000,000, and crime costs $600,000,000 a year. A great proportion of this loss could be saved if proper hygienic measures were taken by government authorities. Much of the loss is due to lack of intelligent development and to criminal indifference. The very sacrifices which have been made in the war demand that attention be paid to laying the foundation which will ensure healthy living conditions and increased efficiency in the future.

PLEURISY: EXPERIMENTAL AND CLINICAL

By Robert C. Paterson, M.D.
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ALTHOUGH the diseases of the pleura are an old study, the importance of pleurisy is being more and more recognized as constituting in many cases one of the initial and earliest symptoms of tuberculous infection of the lungs. Soper, writing from a Base hospital in France, tells me that a large proportion of the chest cases are pleurisies, and Ameuille[1] of the French army, has made the same observation. The importance of the subject is therefore apparent, and any work which can give us new light and fresh information may not be out of place.

In an attempt to obtain serum from pleural effusions for some experimental work, I was surprised to find that no fluid was produced in the pleura of rabbits, after inoculating with tubercle bacilli a previously induced pneumothorax. On making a second inoculation several weeks later, fluid was produced rapidly and in abundance. These observations opened up the whole question of the causation of pleural effusions, a subject which had not previously been investigated except by Cleaveland Floyd[2], who found that purulent pleural effusions were caused in experimental animals by inoculating a previously sensitized pleura with virulent pyogenic organisms, but that without such previous sensitization, pus was not produced. I decided to do some experimental work to find out how the pleural reaction to a second infection differed from that to a first, and whether the altered reaction was a part of a general allergic condition of the body or was dependent on previous local infection. In 1890 Koch[3] noticed that the skin of a guinea pig already tuberculous reacted to an inoculation of tubercle bacilli, quite differently from the skin of a normal animal. Since that time, this altered reaction of tuberculous animals to reinfection has been studied, but it is only recently that its importance in interpreting the manifestations of clinical tuberculosis has been recognized.

Read before the Peterborough Medical Society, September 24th, 1917.

Experimental study. A number of guinea pigs were given a subcutaneous inoculation, in the right groin, of an emulsion of tubercle bacilli which have been cultivated for over twenty-five years and which, during cultivation, have lost most of their virulence for guinea pigs, and after subcutaneous inoculation cause a localized abscess, and reach the regional lymph nodes, but do not become generalized or cause death. Animals thus infected will react to tuberculin. I have called the animals treated in this way "vaccinated animals", and the infection the "vaccinating inoculation". Three weeks or more after this infection with bacilli of low virulence, these animals, and a like number of normal controls, were inoculated in the right pleural cavity with an emulsion of virulent human bacilli. The vaccinated animals, within a few hours after the virulent intrapleural inoculation became noticeably ill, their fur was rough, breathing was rapid, they did not eat, and they lost their natural liveliness. A certain number did not recover from this condition and died in from seven days to two weeks. Death was thought to result from toxæmia, the livers at autopsy showing considerable necrosis. That this condition was not due to the operation is shown by the fact that none of the control animals showed any ill effects whatever following the inoculation, and within a few minutes were apparently perfectly normal, and none of these controls died as a result of the operation itself. If the vaccinated animals survived the first few days, they regained their healthy appearance and lived for upwards of ten weeks, some surviving as long as one hundred and fifty days, and at autopsy showed a generalized chronic fibro-caseous tuberculosis. In contradistinction to this the controls became progressively weaker and died with a remarkable regularity, in from four to six weeks. These animals presented a picture of an acute miliary tuberculosis. These differences are shown in the table on page 162.

In order to study the pleural changes animals were killed in pairs, a vaccinated and a control, at different periods after the intrapleural inoculation, and the pleuræ of the two series compared. The pleural response to the inoculation in the vaccinated animals is rapid and marked. In one hour after inoculation there is found a hæmorrhagic exudate, greater in amount than the fluid injected. This increases from day to day and reaches its maximum by the eighth or tenth day after which it is rapidly absorbed. Sometimes the fluid is so great in amount as to cause definite dyspnœa, and in each case in which it amounted to 10 c.c. or over, the surface of the lungs presented a wrinkled appearance from compression. In

TABLE I.

Comparative length of life after inoculation in vaccinated and control animals

VACCINATED			CONTROLS		
Pig No.	Length of life	Remarks	Pig No.	Length of life	Remarks
	days			*days*	
26	7	20 cc. fluid	6 C	25	No adhesions
27	7	20+cc. fluid	10 C	28	Adhesion at point of inoculation
28	10	10 cc. fluid			
43	14	25 cc. fluid	8 C	36	One adhesion, right lung
49	27	Cause of death, acute pneumonia	13 C	30	Few pleural tubercles
			14 C	36	Adhesion at point of inoculation
5	28	Pneumonia (?)			
9	73	Tuberculous meningitis	20 C	31	No adhesions
14	78	Generalized chronic tuberculosis	38 C	31	Adhesion at point of inoculation
13	82	Generalized chronic tuberculosis	26 C	36	Pleura negative
			39 C	39	Pleura negative
10	115	Generalized chronic tuberculosis	27 C	67	One adhesion, right pleura
18	133	Generalized chronic tuberculosis	43 C	32	Acute pneumonia
38	111	No adhesions in pleura	44 C	36	No adhesions
39	123	Generalized chronic tuberculosis	45 C	36	Acute pneumonia
50	94	Generalized chronic tuberculosis, many adhesions	28 C	92	Chronic tuberculosis, few fine adhesions
40	141	Still living			
44	141	Still living	40 C	79	No adhesions
45	141	Still living			

nearly every case the opposite pleura from the one in which the inoculation was made, showed similar changes to those found in the side into which the bacilli were injected. This is undoubtedly due to a direct infection through the mediastinum which is very thin in guinea pigs. The character of the fluid varies according to the amount of bacilli injected, large doses, 0·001 gram or over of dried bacilli, producing a hæmorrhagic effusion while smaller doses cause only a serous or faintly blood-tinged or turbid effusion.

With the development of the effusion there is also a marked production of fibrin which is deposited on the pleural surfaces, both visceral and parietal, giving them a shaggy appearance. It is noteworthy that in every case in which fibrin was present a con-

TABLE II

Results of varying dosage

Pig No.	Vaccinated	Intrapleural	Dose	Killed	Fluid	Character
				days		
51	March 23, 1917	April 14, 1917	0·001	2	8 c.c.	Serous, considerable fibrin in both pleuræ
52	March 23, 1917	April 14, 1917	0·0001	2	5 c.c.	Bloody in both pleuræ, some fibrin
53	March 23, 1917	April 14, 1917	0·00001	2	Few drops	Serous, right pleura
54	March 23 1917	April 14, 1917	0·000001	2	Few drops	Serous, right pleura
55	March 23, 1917	April 14, 1917	0·0000001	2	None	
56	March 23, 1917	April 14, 1917	0·001	4	15+c.c.	Very bloody, much fibrin, both pleuræ
57	March 23, 1917	April 14, 1917	0·0001	4	12+c.c.	Serous, slightly bloody, some fibrin
58	March 23, 1917	April 14, 1917	0·00001	4	5 cc.	Slightly bloody, no fibrin
59	March 23, 1917	April 14, 1917	0·000001	4	None	No fibrin
60	March 23, 1917	April 14, 1917	0·0000001	4	None	No fibrin

siderable amount was found in the interlobar fissures of the lung. As the effusion is absorbed, the two pleural layers become adherent to one another by this fibrin so that the pleural space may be temporarily obliterated. Eventually much of this fibrin is absorbed leaving a smooth pleura, while some becomes organized into fibrous tissue and remains permanently as firm fibrous adhesions. In the control animals there is little or no immediate pleural reaction following inoculation. With excessive doses, 0·002 gram or over, there may be a small amount of effusion and fibrin, but it is invariably less than in the vaccinated animals and does not always occur, while with small doses there is no exudation and no adhesions unless the underlying lung has been injured by the needle during the inoculation, in which case a localized traumatic pleurisy develops with one or a few fine adhesions as an end result.

The study of the effusions showed several interesting facts. The cells were at first almost exclusively polymorphonuclear leucocytes, a finding that we usually associate with acute and pyogenic rather than with tuberculous infections. In a short time, usually by the second day, lymphocytes make their appearance, and the polymorphonuclears gradually disappear until the small round cell

is the predominating one. At the time of the appearance of the lymphocytes a large cell with rather faintly straining nucleus also appears. This cell is very actively phagocytic and in them may be seen bacilli, fragments of nuclei of other cells and broken down red blood cells. They are probably mesothelial cells from the pleural membrane. Although relatively enormous numbers of tubercle bacilli were inoculated into the pleura, it was found that these had almost entirely disappeared by the end of the first twenty-four hours, and could not be demonstrated either free in the fluid or phagocyted by the cells. This rapid disappearance of bacilli has been noted by Manwaring and Bronfenbrenner[4] in a study of the lysis of tubercle bacilli when injected into the peritoneum of tuberculous guinea pigs. In spite of our inability to find the bacilli by most careful search and the usual staining methods, the effusions were found to be virulent, as long as they were present, for normal animals, and to cause well marked tuberculosis. This fact does not correspond to the findings of Rist, Rolland and Kindberg[5], who experimented with peritoneal exudates and who state that the inoculation of the "allergic exudate" failed to produce tuberculosis in seven out of twelve guinea pigs. Our results, as shown in Table III, were quite definite and prove, moreover, that the virulence of the bacilli is not lowered by the action of the serum.

TABLE III.

Virulence of effusions

Pig No.	Fluid from Pig	Days after Reinoculation	Inoculation	Method	Killed	Autopsy
21 Test*	21	1	Nov. 14, 1916	Subcutaneous	Dec. 27, 1916	Right inguinal gland caseous: deep iliac glands +, spleen tuberculous: acid-fast tubercle bacilli in pus
21 Test	21	1	Nov. 14, 1916	Intraperitoneal	Dec. 27, 1916	Tuberculous inguinal glands
22 Test	22	3	Nov. 16, 1916	Subcutaneous	Dec. 28, 1916	Inguinal glands caseous: acid-fast tubercle bacilli in pus

Pig No.	Fluid from Pig	Days after Reino-cula-tion	Inoculation	Method	Killed	Autopsy
22 Test	22	3	Nov. 16, 1916	Intraperito-neal	Dec. 28, 1916	Spleen tuberculous
23 Test	23	5	Nov. 18, 1916	Subcutaneous	Jan. 10, 1917	Inguinal glands caseous: spleen, two small nod-ules
23 Test	23	5	Nov. 18, 1916	Intraperito-neal	Jan. 10, 1917	Spleen slightly tu-berculous
24 Test	24	7	Nov. 20, 1916	Subcutaneous	Jan 10, 1917	Caseous abscess, right groin: spleen tubercu-lous: few foci in lungs
24 Test	24	7	Nov. 20, 1916	Intraperito-neal	Jan. 10, 1917	Spleen slightly tu-berculous: few foci in lungs
25 Test	25	9	Nov. 22, 1916	Subcutaneous	Jan. 10, 1917	Inguinal glands +: spleen, one nod-ule
25 Test	25	9	Nov. 22, 1916	Intraperito-neal	Jan. 10, 1917	Spleen tuberculous: liver probably tu-berculous
29 Test	29	11	Dec. 5, 1916	Subcutaneous	Jan. 19, 1917	Generalized tuber-culosis (killed with one c.c. old tuberculin, in-jected intraperi-toneally)
29 Test	29	11	Dec. 5, 1916	Intraperito-neal	Jan. 19, 1917	Generalized tuber-culosis: serous effusion in both pleuræ
36 Test	36	11	Dec. 6, 1916	Subcutaneous	Jan. 22, 1917	Generalized tuber-culosis
36C Test	36C	11	Dec. 6, 1916	Subcutaneous	Jan. 22, 1917	Generalized tuber-culosis
30 Test	30	13	Dec. 7, 1916	Subcutaneous	Jan. 12, 1917	Generalized tuber-culosis
30C Test	30C	13	Dec. 7, 1916	Subcutaneous	Jan. 22, 1917	Generalized tuber-culosis

* Test after number means that the test fluid was obtained from the pig of the corresponding number.

In one or two of the test pigs the localized nature of the disease produced by the effusion suggested that the virulence of the bacilli

had been lowered, but on making cultures from the glands of these animals and then inoculating fresh pigs the bacilli were found to be just as virulent as those of our original cultures. The question as to what becomes of the bacilli after injection has not been altogether settled. Some are taken up by the pleural lymphatics and carried to neighbouring glands, some are phagocyted, and some are enmeshed and held in the fibrin and thus deposited on the pleural surfaces and in the interlobar sulci. Do any remain free in the serum, and if so, what form? Our results would seem to show that some do remain free in the serum, although we were unable to find them, but whether this was because they are too few in number to demonstrate or because they are concealed in flakes of fibrin or because there is a non-acid fast form of the bacillus, as is held by[6] Much and his followers, which does not stain by ordinary methods, I am not yet in a position to state. This inability to find bacilli in tuberculous effusions which are none the less virulent and capable of causing tuberculosis in guinea pigs, corresponds to the common clinical experience that fluid from a pleurisy may be tuberculous, although no bacilli can be demonstrated microscopically.

I shall not attempt to discuss at great length the mechanism of this altered reaction to infection of the pleura of already tuberculous animals for this brings up the whole question of immunity in tuberculosis and we would soon be far afield from our original subject. Briefly, however, I believe that the difference in reaction in tuberculous and normal animals lies in an alteration of the fixed tissue cells, which has been spoken of as an "allergic" condition, rather than in any change in the serum or body fluids. This altered reactive power to reinfection has been found in all the tissues of the body which have been tested, lungs, peritoneum, liver and skin. That the serum of the effusion is not the active agent is proved by the fact that the effusion is the result of the reaction and this very production of effusion is the basic and essential difference in the response of the vaccinated and normal animals. It might be suggested that the effusion once produced acted on the bacilli in some way so that their virulence was immediately lowered and the subsequent course of the infection thus altered, so that we obtain, as has already been shown, a more chronic tuberculosis in those pigs which have responded with the development of an effusion. To decide the question as to whether the serum lowers the virulence, the fluid was withdrawn from some animals and added to an emulsion of virulent bacilli and the whole incubated for

forty-eight hours, the mixture then being injected into the pleuræ of normal guinea pigs. These pigs behaved exactly like those which were above described as controls and the bacilli disseminated rapidly setting up an acutely fatal tuberculosis. I also tried inoculating the pleura of normal pigs with a bacillus of known low virulence and with an emulsion of killed virulent bacilli. The result of these experiments did not correspond to that following the inoculation of virulent bacilli into the pleuræ of tuberculous animals, but was similar to that which follows the introduction of any mild irritant into a pleura. As above stated, virulent bacilli were found in the pleural effusion by inoculation as long as any effusion was present. From these facts it seems to be a fair deduction that our results are not due to an alteration of the virulence of the bacilli or to the action of the serum on the bacilli, but must be explained by an alteration of the tissues themselves. In the vaccinated animals the response to the virulent intrapleural inoculation is in the nature of an acute inflammatory change and this inflammation tends to localize the bacilli. Some are phagocyted; some are enmeshed in fibrin and thus held; some are rapidly taken up by the lymphatics and carried to the regional lymph nodes while those which remain free in the pleura are diluted by the serum so that absorption would be more gradual. These considerations may account in part for the more chronic course of the general infection in the vaccinated animals, but it must be remembered that all the other tissues of the body, as well as the pleura, are in an allergic condition from the vaccinating inoculation so that the tissues in which the bacilli secondarily come to rest will also react differently from normal tissues and the further course of the infection thus be altered.

One interesting fact brought out by these experiments, as it were, a by-product, is this, that the mediastinal lymph nodes, with the tissues of the mediastinum, almost invariably showed an early infection with the bacilli, and the opposite pleura was very frequently diseased similarly to the one injected. This may explain the origin of infection in some of those clinical cases which are occasionally met with, in which tuberculosis is found in the substernal glands and abscesses from these present in the intercostal spaces near the sternum.

Summarizing the experimental work: intrapleural inoculations of tubercle bacilli in tuberculous animals result in an effusion and development of fibrin which does not occur in controls receiving a first infection intrapleurally; this acute pleural reaction tends to

localize the infection intrapleurally; these effusions can cause tuberculosis in other animals although no bacilli can be found; permanent fibrous adhesions are formed by the organization of the fibrin.*

While experimental work of this nature is interesting from a purely scientific point of view, it is doubly so if it helps us to understand our clinical cases, their symptoms and their rational treatment. From these experiments it seems fair to infer that effusions occurring in clinical cases of pleurisy are not due to a primary infection, but are caused by a pleural infection in a system already tuberculous. If the relatively enormous doses used in our experiments fail to elicit an effusion in normal animals, while very small doses do so in tuberculous animals it would be impossible to imagine the very minute infections, compared to the size of a human being, which are the only ones that we can conceive clinically, causing an effusion unless this infection should be implanted on an allergic pleura. A pleurisy with effusion must be looked on as a reinfection and not as a primary condition as it is usually considered. This secondary infection must reach the plaura from some focus already present in the body. It is impossible for it to be directly infected from without, except under most exceptional circumstances, as by trauma. I would offer the same suggestion as to the cause of the effusions which we so often see in our cases of artificial pneumothorax. In these patients the pleura is rendered allergic by the disease in the lungs for which the pneumothorax is induced. By the production of the pneumothorax the lung is compressed and the lymph flow altered from the normal by this compression, bacilli probably more readily gaining entrance into the pleura than they could under normal pleural relations and pressure, or else adhesions are torn as the lung contracts and bacilli are liberated from the torn surfaces. These bacilli infect the altered pleura and an effusion results, the character of the effusion, serous, turbid or frankly purulent, depending on the number of bacilli which enter the pleura. The rapid accumulation of fluid in a chest is a fact that we all recognize as a clinical truth. A man has a stitch in his side one day and the next we find his pleura filled with fluid. That this is not only possible but is a regular result of reinfection of the pleura is shown by our experimental animals. In these also we see the rapid disappearance of the fluid by absorption, a fact also well

* This experimental work has been described more fully in an article "The Pleural Reaction to Inoculation with Tubercle Bacilli in Vaccinated and Normal Guinea Pigs," which appeared in the *American Review of Tuberculosis*, vol. i, 6, August, 1917.

recognized clinically. If we thoroughly appreciate the fact that a pleurisy with effusion is not primary in itself, but is a reinfection from within, of a person already tuberculous, our conception of a rational treatment and prognosis will be altered. After all the symptoms of pleurisy have subsided with treatment, we will realize that the patient is still tuberculous and that the same or more serious consequences may again result unless the original disease, usually glandular or pulmonary, is thoroughly arrested and becomes so firmly encapsulated that further spread is unlikely. This result is to be obtained by regulating the patient's life for a sufficiently long period of time along the lines of the well recognized treatment for tuberculosis, and only when we realize that we are not treating pleurisy alone, but are treating a pleural condition in a tuberculous individual will the results of our treatment be adequate and permanent.

How is the effusion itself to be treated? Shall it be left alone or shall it be removed? These are questions of importance to us all, and even more important to our patients. The effusions in our experimental animals only occured in those which showed a relative immunity to the disease and the production of an effusion must be looked on as one manifestation of immunity, however slight this immunity may be. The effusion of itself then is not a harmful thing, but probably is one of nature's helps in localizing the infection, for we have seen that in those pigs in which there was a local reaction to the infection and in which an effusion developed the disease assumed a much more chronic course than in those whose pleura showed no reaction. In some animals, to be sure, there was an over-reaction and the animals became dyspnœic and were in danger of suffocation from the large amount of fluid in their chests. This is only another example of what is so often seen in pathology that the natural processes of healing may be so excessive as to be a source of danger. With this conception of an effusion as an immune manifestation which may be excessive, our line of treatment is indicated. It is not wise to immediately aspirate an effusion merely because we have discovered that it is present. Clinical experience has shown that many patients show a decided improvement after they have had a pleural effusion. Just how this benefit occurs we do not understand, but the fact itself remains. In some cases it is undoubtedly due to mechanical effects, the fluid serving to immobilize the lung, thus aiding healing of disease in this organ; but in others the effusion is too small to possibly have any such immobilizing or splinting effect and it is in these cases

that the resulting improvement is hard to explain or understand. On the other hand when an effusion is sufficiently large in amount to embarrass respiration, to displace the heart to such an extent that its action is interfered with, to force down the diaphragm and impair the function of the stomach, then relief, by removal of the fluid, is indicated and demanded. A general rule then might be given; aspirate large effusions which are producing symptoms by the amount of fluid, and leave alone small effusions which are not causing inconvenience. Between these two classes there are, however, a great many cases in which the effusion is comparatively large in amount, but producing no definite symptoms, and those where the effusion has been present for some time and shows little or no tendency to be absorbed. For these it is impossible to formulate definite rules and each case must be studied for itself. I would urge conservatism in the decision whether or not to aspirate, and ask you to remember that, as I said a moment ago, the development of an effusion represents one manifestation of an immune reaction. These remarks apply equally to the pure tuberculous empyemata which are occasionally found. If the infection is due solely to tubercle bacilli and not to a mixed infection, its removal should only be undertaken for some definite reason and if removal is decided on, aspiration and not thoracotomy, is the method of choice. If a portion of a rib is resected and a drainage tube inserted, secondary infection is almost invariable and such secondary infection is to be dreaded because of its known harmful results to the patient. These effusions, serous or purulent should, therefore, be left alone unless there is a definite indication for their removal, as when their presence is causing harm or endangering the patient's life. As regards the effusions which occur in about 40 per cent. to 50 per cent. of our artificial pneumothorax cases, we, at Saranac Lake, have come to the conclusion that they are best left alone unless very large in amount. These effusions are frequently found to be purulent, but often improvement begins only subsequent to their development. The question of operating or not on cases of natural pneumothorax in which pus has developed is often very difficult to decide. In these cases the pus is often due to pyogenic organisms and not to the tubercle bacillus, although we sometimes find pure tuberculous pus, even though the pleura is in direct communication with the respiratory tract through the tear in the lung. Personally I have never seen a case of spontaneous pyopneumothorax recover either with or without operation. The condition in any case is most pitiable. With operation the pleura

drains freely, dressings have to be frequently changed, the skin becomes excoriated from the discharge, the sound of air being sucked through the external opening, is most unpleasant and little or no improvement in general condition is seen to counterbalance all this misery. On the other hand, if left alone, with change of position, the pus may enter the lung through the tear, causing spasms of cough, septic absorption rapidly wears the patient down and aspiration of matter into the lungs causes rapid spread of disease. The last few cases of this kind that I have seen I have treated symptomatically, aspirating the fluid to relieve symptoms and this is possibly as helpful a treatment as any.

It must be remembered that aspiration or thoracentesis is an operation presenting possibilities of certain complications and demanding certain precautions in technique. Anæsthesia is of first importance, not only of the skin, but also of the deeper tissues down to and including the pleura. This is best produced by using a long hypodermic needle and infiltrating the tissues successively from skin to pleura. The danger of pleural reflex or pleural shock may in this way be eliminated. Much discomfort to the patient may be avoided if after anæsthetization the skin is incised with a fine sharp scalpel. This renders less force necessary in introducing the aspirating needle and also prevents the blocking of the needle with a punched out plug of skin. Frequently the fluid withdrawn is replaced with a slowly absorbable gas, as filtered air or nitrogen, which keeps up temporarily the pressure on the lung and allows the lung to re-expand slowly as the gas is absorbed, thus preventing the rapid expansion of the lung and rapid return of mediastinum, heart, and large vessels to their normal positions, which occurs after the aspiration of large amounts of fluid. This substitution of a gas for the fluid withdrawn will also largely prevent the rapid re-accumulation of the effusion which so frequently occurs after removal of large quantities of fluid from the pleura.

Let us now consider briefly the characteristics of the fluid found in tuberculous pleurisy. This is usually clear or slightly turbid, of straw colour, coagulates rapidly on standing and contains albumen and various cellular elements. While we are usually taught that the lymphocyte is the characteristic cell of tuberculous effusions and while this is usually found to be the predominating cell, the first response to an infection with tubercle bacilli is a pouring out of polymorphonuclears and in the more purulent effusions of tuberculous origin the polymorphonuclears may be the only cells found. One reason that we do not more often find polynuclear

cells in the effusions is that the period of the predominance of this cell has usually passed before the fluid is aspirated, for the fluid is seldom if ever obtained within the first twenty-four hours. Rist has recently made the statement that large numbers of eosinophiles are found in the early stages of artificial pneumothorax effusions, but I have not as yet been able to investigate this point. It also occasionally happens that the fluid contains a greater or lesser number of red blood corpuscles, although a frankly bloody effusion is more often associated with, and is very suggestive of, a malignant tumour of the lungs, mediastinum, or pleura. This cellular picture as seen clinically corresponds to that found in our experiments in which there was at first a polynucleosis followed later by a lymphocytosis and a disappearance of the polynuclears. In our effusions also there was a varying amount of blood, from a faint tinge to an almost pure hæmorrhagic exudate. It is always difficult and requires prolonged and careful search to demonstrate tubercle bacilli in smears from even an unmistakeably tuberculous pleural exudate, but such exudates when inoculated into guinea pigs almost invariably produce tuberculosis, proving that the bacilli must have been present. Here again we find our experimental work corresponding exactly to clinical experience, as was mentioned earlier in this paper. At the same time as the serum is effused and in dry pleurisies without any effusion of serum, there is an exudation of fibrin from the pleural surfaces. This coats the pleura to a greater or less extent and with the absorption of the fluid causes an adhesion of visceral and parietal pleuræ. Much and sometimes all of this may be absorbed, leaving the underlying pleura smooth and glistening, but some may become organized into fibrous tissue forming those firm fibrous adhesions which we see at autopsy and which cause so much difficulty in our attempts to induce artificial pneumothorax. These facts were corroborated in our experimental animals in which a perfectly smooth pleura was left after many fibrinous adhesions had been present. This capacity of the pleura to absorb fibrin was a great surprise to me, although it has been noted clinically in several recent cases in a striking manner.

I would like to add a few words about the diagnosis of pleurisy. While in well marked cases the diagnosis is easy, the pain, short, shallow respiration, the irritative cough and the friction rub being a combination of symptoms which are unmistakeable, yet there are other cases in which the friction is not marked and in which pain is the chief symptom. Intercostal neuralgia or pleurodynia, herpes zoster and vertebral caries probably cause the most difficulty

in diagnosis. It should be remembered that intercostal neuralgia is often only the external manifestation of a pleurisy somewhere along the course of the intercostal nerve, and that while the pain may be felt over the distribution of the anterior or lateral cutaneous branches, the pleurisy causing the irritation may be in the axilla or posteriorly. I find it very helpful, and always a safe precaution to take, to trace the course of any nerve giving symptoms of pain backwards to its origin in search of an explanation of this pain, if none is found locally. By doing this we may find the cause of pleurodynia to be a posterior pleurisy, or caries of the vertebra, corresponding to the nerve involved. It must also be remembered that the pain of a pleurisy may not be felt in the chest at all, but may be referred along the course of the lower intercostal nerves and be felt in the abdomen, and more than once the abdomen has been opened with negative findings and a pleural effusion or pneumonia discovered later on. This referred pain in pleurisy is comparable to the knee pain in hip-joint disease or to the sciatic pain in sacro-iliac disease. When a pleurisy is located near the apices of the lungs, complaint of pain in the shoulder and down the arm may be made, and is explained only by careful examination of the chest. Once an effusion has developed, the diagnosis is made on different signs. Pain largely disappears, but an uncomfortable, tight feeling may be present; as the pleural surfaces are separated by the fluid the friction disappears, the percussion note is dull or flat, breath sounds absent, vocal resonance and fremitus absent. Above the level of the fluid, the lung may be compressed and present certain abnormal signs. The thoracic organs may be displaced, all symptoms varying according to the amount of fluid present. At times these typical signs are not all present and we may get blowing breathing and whispering pectoriloquy over the fluid. This, of course, suggests some consolidation which has to be differentiated. The chief difficulty, however, in diagnosing fluid is to distinguish it from a thickened pleura or some solid growth of the lung itself.

Having made a diagnosis of pleurisy, either plastic or exudative, it still remains to determine the cause of the pleurisy. While pleurisy occurs in a number of infections and conditions, as with pneumonia, with typhoid, with tumours, with pyogenic infections, in heart disease, nephritis, and possibly with rheumatism, by far the most frequent cause is the tubercle bacillus. So frequently is this the ætiological factor that it is a safe rule to call every pleurisy tuberculous, unless there is other definite cause; that is, the burden of proof should be on the physician who says that a pleurisy is non-tuberculous.

If I were now asked what I consider the most important facts discussed in this paper, I would say: that a pleurisy is, in the majority of cases, tuberculous, and not only is it caused by the tubercle bacillus, but it occurs in a person already tuberculous; that treatment does not end with the disappearance of the symptoms of the pleurisy, but must then be directed to the primary tuberculosis; that the effusion is a manifestation of immunity and should not be removed without reason; that aspiration is an operation presenting certain definite dangers which, however, may be greatly lessened by careful technique.

BIBLIOGRAPHY

1. Ameuille—*Ann de med.*, 1917, i, 55.
2. Floyd, C.—"*Tr. Am. Climat. Ass.*, 1914, xxx, 205.
3. Koch, R.—*Deutchse Med. Wchnschr.*, 1891, xvii, 101.
4. Manwaring and Bronfenbrenner.—*J. Exp. Med.*, 1913, xviii, 601.
5. Rist, Rolland and Kindberg—*Ann. de med.*, 1914, i, 312-375.

The Hon. J. G. McKay, the first provincial minister to be put in charge of health affairs in any province in Canada, has come forward with the announcement of a hospital policy for Alberta of a most progressive nature. He advocates salaried resident doctors in all district hospitals; training schools for nurses, maintained jointly by the Provincial Government and the large cities; including the cities under the Municipal Hospital Act. He proposes that henceforth the provincial department will take the lead in organizing and advising hospital districts. In this he completely reverses the plan formerly adopted, which left everything to the initiative of the rural municipality. The Moose Jaw Board of Trade first fathered the idea of provincial hospitals at the Prince Albert Board of Trade convention some dozen years ago.

Editorial

WAR-TRAINED SPECIALISTS FOR THE BOARD OF PENSIONS

THERE has probably never been a four-year period in the history of medicine in which the activity of the profession has been carried on at higher pressure or with more concentration on certain branches of medical science than has been witnessed since 1914.

Exclusive of the treatment of the many types of wounds, marked advances have been made in the study of most of the ills to which flesh is heir, and there is no disease or injury of war but has produced its own specialist workers.

The advances in medicine thus made have yet to become common property. The State, therefore, cannot afford to lose the services of those to whose efforts they have been due. There is a field, the boundaries of which cannot yet be determined, for the employment of these men; for with the end of the war we have not come to the end of its injurious effects upon the participants.

In England, the Ministry of Pensions has publicly announced its intention of availing itself of the services of the war-trained specialists for the treatment of war invalids and the determination of their pensionability.

It is realized that though the civilian practitioner is capable of deciding upon a man's fitness for service, he is by no means as competent to be a judge of the soldier's condition on discharge. By virtue of first hand experience with war injuries, infections and diseases, those physicians who have shared in the hardships, vissicitudes, and exposures entailed by service in the field are undoubtedly best qualified to discharge satisfactorily the debt still owed to the disabled.

In the Canadian forces are many men eminently well-equipped by four years of strenuous study to complete this task. Some of these men have been returned from overseas and are already engaged in this work; others will become available as demobilization proceeds. The Canadian Pensions Board has from its inception availed itself to the fullest extent of the services of returned medical officers.

The expressed intention of the British Ministry of Pensions is already an established fact in Canada.

It has been announced by Dr. George E. Vincent, President of the Rockefeller Foundation, which has an endowment of $100,000,000, that the organization, after diverting its activities for four years to war relief and army welfare work, in which it expended $21,000,000, will immediately resume its work of attempting to rid the world of disease. The conquest of Yellow Fever and the Chinese Plague will largely enter the campaign. The peace programme adopted by the organization contemplates the expenditure of millions of dollars annually in attacking human ills in every part of the world.

Major-General William C. Gorgas, recently surgeon-general of the United States army, will soon head an expedition of scientists to Central and South America to examine the yellow fever conditions there. He will be accompanied by five noted experts and believes that by battling with the disease at its source in these countries it can be exterminated in a few years.

The plague in China and other Asiatic countries the organization will endeavour to exterminate. The medical school in Peking, erected by the Rockefeller Foundation at a cost of $6,000,000, will be opened not later than October, 1920. Another medical school will be built at Shanghai.

Leaders in the work of the eradication of tuberculosis in Great Britain, have been advocating the farm colony as

complementary to the work of the sanitoria. There are several such existing institutions, two of them being in Scotland. The colony might take from the sanitoria patients with the disease dormant, and who do not require nursing. The patient must be treated and trained so as to become capable of earning a livelihood under suitable conditions, with the risk of relapse reduced to a minimum. The work of the colony should be varied and interesting, supplying different grades of labour and sustaining interest. The colony should be within reasonable distance of a market and not contiguous to the sanitorium, with which it is worked in co-operation. The residences of the colonists need not be elaborate, and the buildings for the stock should be well designed and kept scrupulously clean. The risk of infection to stock and produce is negligible under strict medical supervision. The usual period of residence is one year. In one farm colony there was a pavilion for children, with a teacher in residence who taught them and supervised their work in gardening and forestry.

The visit of Sir Arthur Pearson, the distinguished blind publisher and philanthropist, to this continent, has been of great interest and of much value to the important work of the re-adjustment and re-education of the invalided soldiers in this most difficult of all handicaps. Sir Arthur may be considered the founder of a new generation of blind men, who are not to be considered as blind, he is fond of saying, but as normal men without sight. His conception of a great training-school, in which the problems of bringing courage and means of self-support to the keen ambitious youths blinded in action in the present war, was formed late in 1914, and in March, 1915, St. Dunstan's College in London was opened by him, through the generosity of an American financier, Otto Khan, with sixteen inmates. Since then it has grown to include four London annexes and others at

Brighton, Hastings and Elkwyn. Ninety-four Canadians have undergone training at St. Dunstan's in the "Victory over Blindness", which is the motto of the place, and in massage, shorthand, telegraphy, poultry-raising, farming, and the other arts and the sports taught. Altogether some fifteen hundred British soldiers were blinded at the front. Six hundred and fifty-six of these have been through St. Dunstan's and the majority are earning more money now than they did before they became blind.

On his arrival Sir Arthur first visited Toronto and formally opened Pearson Hall, the Toronto Branch of St. Dunstan's, which has been named after himself. He then proceeded to Montreal and thence to Baltimore, where he discussed details of the work with the American authorities. The new American Hospital for the Blind is to be named the New St. Dunstan's in recognition of the splendid work done by the London institution. In his addresses, the courage shown by the blinded men in the first days of their affliction was particularly emphasized. "There's a period of dreadful hopelessness," he said, "the courage and resourcefulness of your Canadian boys have been beyond any tribute I can pay. It is the same courage that enabled them to carry Vimy Ridge, that enables them to meet the present situation, and accomplish miracles. And they are miraculous, for they accomplish in months what used to take years."

Obituary

DR. LIONEL BEECH

In the death of Dr. Lionel Beech, British Columbia loses a man of distinguished career and one who was universally respected. He died at the Ganges Hospital, Victoria, on December 16th, after a short illness followed by an attack of paralysis. Dr. Beech was trained at the London Hospital, where he was twice elected House Surgeon. In 1873 he entered the Indian Medical Service, being first attached to the artillery, and then to the 38th Native Infantry, in Trichinopoly; from thence he was transferred to the 1st Light Infantry at Secunderabad. With this regiment he went through the Afghan War, 1879 and 1880, and received the War Medal. He was next appointed civil surgeon at Bellary during the Indian famine, and for the services rendered received the thanks of the Government. He also went to the Laccadive Islands on a leprosy commission, and remained there three months.

In 1893 Dr. Beech came to Manitoba, where he practised for eight years. He went finally to British Columbia, and settling on Salt Spring Island, in 1904, took up practice there. He leaves a wife, two daughters and five sons. All of the sons have been through the war, and two of them are medical officers in the Canadian Army Medical Corps.

DR. PHILIP HOWARD SPOHN

One of Ontario's oldest medical practitioners passed away recently in the person of the late Dr. Spohn, of Penetang. Graduating from the old Toronto School of Medicine forty-seven years ago, he entered immediately into practice at Penetang, where he remained in active service until eighteen months ago, when he removed to Toronto. During his life, Dr. Spohn was intimately associated with the public affairs of his town and county. He was the first reeve of Penetang, and in 1891 was elected a Liberal member in the Dominion parliament for the riding of East Simcoe. For twenty-five years he was surgeon in the old Reformatory for

boys, and was the first superintendent of the Hospital for the Insane, Penetang. He is survived by his wife and six children; one son is an officer in the Royal Army Medical Corps.

DR. WILLIAM THOMAS LITTLE

Dr. William Thomas Little, of Flesherton, passed away at the General and Marine Hospital in Owen Sound on November 2nd. He had been ill only two weeks and death was due to complications which followed an attack of Spanish Influenza. The late Dr. Little had been exceedingly overworked before his illness, and, like so many of the doctors who have died in the influenza epidemic, he literally gave up his life for his patients. He was in his thirty-fifth year. After his course at the Toronto Medical College, he was appointed house surgeon at the General and Marine Hospital. He subsequently went to practise at Flesherton, and in 1915, feeling the call for service overseas, he joined the R.A.M.C. with the rank of Captain. Arriving in England, he was sent immediately with the British army to Mesopotamia and saw active service there. After a severe illness, he was sent to Bombay, and later became a specialist in a large hospital in that city. Since his return to Canada in 1917, he had been practising in Flesherton where he won the love and respect of everyone. Dr. Little was married only last July, and universal sympathy is felt for Mrs. Little.

DR. J. W. ATKINSON

Even in these days of manifold calamity and the sympathy evoked thereby, the recent death of Dr. John Atkinson, the well known and popular physician of Mitchell seems particularly sad. Dr. Atkinson died during the recent epidemic after an illness of but two days. Although he had a bad cold, he worked continuously without thought of self, in the effort to stem the tide of the epidemic. As a result of this high pressure he was in no condition to successfully fight the disease. He was forty-seven years of age. He attended the London Medical School, and was a gold medallist, and house surgeon at Victoria College for a year. He practised for sixteen years in Mitchell.

Dr. Clarence William Field, one of Edmonton's best known and most prominent physicians, died on December 9th,

after a lengthy illness. He was under treatment with specialists in New York some time ago, but his ailment steadily increased and all hope of his recovery was abandoned. The deceased physician was born in Milton, Ontario. His medical and surgical training, as well as a special course in pharmacy, was taken at Toronto University. For the past few years he has been registrar of the medical association in Alberta. He was a prominent Mason. He leaves a widow and four children.

Dr. John Mackay, a retired physician and a former member of the Ontario Legislature, died at St. Catharines on November 30th, after a long illness. He was born in Eastern Ontario seventy-seven years ago. He graduated from McGill University. After opening a practice in Woodville nearly half a century ago, he, later, took a post graduate course at Edinburgh, receiving the degree of L.R.C.P. and S.

Dr. J. F. Dolan died at his residence in Belleville on December 15th. He had been ill for only a few days when his condition suddenly became so grave that several physicians of the city were called in for consultation, and although everything possible was done to prolong life it proved unavailing. For the past twenty-five years Dr. Dolan has been following his profession and had a wide practice. His kind and sympathetic nature endeared him to all who sought his services. His death will be sincerely regretted by every citizen of Belleville where he was so well known and widely esteemed.

Dr. R. Russell Smale succumbed to pneumonia on November 11th, at his home in Stayner. He studied at Trinity Medical College, Toronto, and was a scholarship graduate. After being resident physician and surgeon at St. Michael's Hospital, Toronto, he began practice at Everett; in March, 1913, he moved to Stayner. Dr. Smale was a very popular citizen, kind hearted and unassuming. He was chairman of the School Board, medical health officer and county coroner.

Dr. J. A. Johnston, also of Stayner, was another victim of the prevailing epidemic. From the beginning it was seen that he would have a hard fight, as he had not given in as soon as advisable. Dr. Johnston graduated at Toronto University in 1910. The greatest sympathy goes out to his wife and three little children

in their great sorrow. The whole community mourn the loss of a kind friend.

Other physicians who have recently succumbed to Spanish influenza are: Dr. Andrew McConville, of Kingston; Dr. D. A. Stewart, Georgetown, and Dr. Michael Donahue, Peaks, both of Prince Edward Island; Dr. T. A. Gourlay, Cayuga; Dr. Morell Oldham, Owen Sound; Dr. Osmond Pogue, Melfort, Saskatchewan.

Dr. F. S. Keele, one of the best known medical men in Manitoba, died recently at Portage la Prairie.

Miscellany

News

MANITOBA

A memorial is to be erected in Brantford to the nurses and young orderlies who have given their lives in fighting the recent epidemic of Spanish influenza in that city. One to the Brantford soldiers, fallen in the great war, will also be undertaken at a later date.

Dr. Burger has been admitted a member of the Western Roëntgen Society, to represent Manitoba. This is considered a high honour, as only skilled roëntgenologists are admitted. During his recent absence, Dr. Burger studied all the methods of the prominent roëntgenologists of Chicago, Kalamazoo, Battle Creek, Detroit, New York, and Rochester.

Dr. F. Orok, late interne of the Winnipeg General Hospital, who was engaged on work in the laboratory department of the institution, died recently from pneumonia following influenza. Dr. Orok was a graduate of Manitoba Medical College.

ALBERTA

Twenty-three of the leading physicians of Calgary have issued a statement to which their signatures are appended, express-

ing hearty approval of municipal hospitals provided they are kept up to or are above the standard of the present efficiency of the Calgary General Hospital. Dr. H. A. Gibson, one of the numbers represented, when called upon for an explanation, stated that the reason for taking the step was because the public press had been harping continuously on the doctors being opposed to municipal hospitals. The doctors were not opposed to municipal hospitals, but they were emphatically opposed to political capital being made out of the movement, which a small element in the city had been trying to do in regard to the Calgary General Hospital, hence their present action.

THE Medical Association of Calgary has put forth the following statement: "As medical men we are not much concerned as to who has control of the hospital; all we desire is an efficient up-to-date institution where scientific treatment of the sick can be carried out. As an association we have not approached nor pledged our support to any candidate for any public office, nor do we intend to do so. We shall use our votes and influence as citizens and ratepayers to elect men from any class who have shown themselves best fitted for the office."

THE Alberta hospital at Bowness is to be built on much the same lines as the Tranquille Hospital, and the plans have been submitted to the Hon. George P. Smith for his consideration. It is the intention of the Dominion and provincial authorities to have a conference before any final decision is made, and it is also intended to invite the heads of the tubercular institutions of the West to this conference. In this way, use can be made of their practical experience in managing hospitals under similar conditions. The original estimate for the cost of the Bowness Hospital was $400,000 of which the province is to pay $200,000. Mr. Smith has also a set of new plans, ten in all, for the municipal hospitals. The new series is considerably cheaper than those first submitted. The smallest plan shown is a twelve to fourteen bed hospital that can be erected for some $4,000 less than the nine bed hospital, the unit in the other plans, which brings the cost of this hospital down to about from $16,000 to $17,000.

SASKATCHEWAN

GREATER efforts are to be made in the future by the provincial bureau of public health to assist the farmer in installing sanitary

schemes of heating, ventilation, water supply and sewerage disposal. Farmers who are planning new buildings are being urged by Dr. Seymour, provincial health officer, to seek the co-operation of the officials of the health bureau, An article on "House Drainage" has been issued by the bureau, and will be followed by other articles on sanitation.

A. H. Hall, deputy minister of education, has received a memorial from the teachers of the Moosomin inspectorate urging upon the government the great necessity of medical inspection for all school children. The desire of the teachers is more fully set forth in the following resolution, passed at the convention and signed on behalf of the teachers assembled there by R. L. Horning, of Moosomin, and E. H. Harris, of Red Jacket.

"That whereas the care of the pupils' health is so indispensable to his best intellectual development and that the necessary care is in some cases beyond the means of the parents to provide, and that the department of education may take whatever steps it may deem wise to secure the enactment of legislation whereby a medical clinic would be provided for each inspectorate, and further, that whereas the child's health is so vital to the best interests of the province, both from the standpoint of susceptibility to and the spread of contagious disease, and likewise to the physical and mental stamina of the manhood and womanhood of the province, that this medical treatment should be assured by providing it free of cost where necessary or desired, the cost of such to be borne by the state."

Harris Turner, M.L.A., will be provincial representative for Saskatchewan for the Canadian National Institute for the Blind. C. W. Holmes, director of the Canadian National Institute, and himself a blind man, recently visited Saskatoon and spent some time with Mr. Turner discussing plans for extending work for the blind in this province. Mr. Holmes purposes, with the approval of the executive committee, to establish at least one home teaching circle in each province. A competent teacher is to be in charge, who shall not only act in the capacity expressly understood by the term, but also as a local paid representative under the immediate direction of the local member of the Western committee, which will be a centre of information and activity. Mr. Holmes said that the plan outlined was the only practicable one to advance rapidly. That such a plan, carried out, would enable him to ac-

complish more in one year, at less expense, then he could single handed, or even with a competent central staff, in five years. For several years past Mr. Holmes has been in Massachusetts in connection with educational work for the blind. When the institute was established in Toronto, he was called to Canada to take charge of it.

INOCULATION of the pupils of the public schools against influenza was commenced on November 26th, by the medical health officer, Dr. Turnbull. The first school to be operated on was the Victoria School. A considerable number of the children have been treated with the anti-influenza serum; there was no compulsion in the matter.

A PRESENTATION was made recently to Dr. McNeil, at the Provincial Hospital, Battleford, in appreciation of the almost superhuman efforts he made to relieve distress during the recent epidemic. For ten days or more Dr. McNeil hardly ate or slept but gave himself body and soul to the care of the sick. Dr. Campbell delivered the presentation address and Dr. McNeil, in acknowledgment spoke of the splendid spirit of co-operation which existed, and thanked the staff for the manner in which they individually and collectively helped through the dark days of the epidemic.

CAPTAIN C. S. COX, of Saskatoon, has been permanently attached to the local board of Pension Commissioners as medical examiner.

DR. ANDREW CROLL has resumed practice in Saskatoon after four years absence on active service. During this period Dr. Croll was surgeon-in-chief at No. 2 Canadian General Hospital, France, and for the past eight months chief surgeon to Camp Hill Military Hospital, Halifax, and consulting surgeon to the military district of Nova Scotia.

THE question of the erection of a new hospital in Moose Jaw is to be prominently brought before the city council. The General Hospital, during the epidemic, proved entirely inadequate to meet the existing conditions. The need for a larger civic institution is felt to be very urgent. The institution opened in 1912. The admissions that year were 806; in 1918 the number had increased

to 1331 (up to October 31st). The operations in 1912 reached 148; in 1918 advanced to 440 (up to October 31st). In 1911 the citizens voted on a by-law providing $75,000 for a hospital, but of this only $17,000 has been used, leaving $58,000 at present invested in Victory Bonds.

The new Kootenay Lake General Hospital, costing $125,000, was officially opened at Nelson.

Lieutenant J. M. Wessel, quartermaster of No. 12 Casualty Unit at Regina, has announced that the Invalided Soldiers' Commission purpose to establish a 200 bed hospital in Saskatoon. It has been known for some time that the Saskatchewan branch of the Hospital Commission has been cramped for room, but it was at first thought that Moose Jaw would be chosen for the new military hospital.

ARMY MEDICAL SERVICES

In the New Year Honour List appear the names of the following officers attached to the Canadian Army Medical Corps:

The Order of Companions of St. Michael and St. George: Colonel Hugh Chisholm, C.A.M.C.; Colonel Spurgeon Campbell, C.A.M.C.; Colonel John Kidd, C.A.M.C.; Colonel William Simpson, C.A.M.C.; Colonel Robert P. Wright, C.A.M.C.

Commanders of the Order of the British Empire: Colonel George Farmer, Colonel John Stewart, Matron Bertha Willoughby, all of the C.A.M.C.

Officers of the Order of the British Empire: Colonel Richard Raikes, Major James Goodall, Major Percy McGillivray, Colonel Albert Smith and Colonel Albert Wimmett (dentals), all of the C.A.M.C.

The Military Cross has been awarded to Captain Charles Atkinson, C.A.M.C.; Captain George Baby, C.A.M.C.; Captain Dougal Banquier, C.A.M.C.; Lieutenant Daniel Cameron, C.A.M.C.; Captain Alexander Campbell, C.A.M.C.; Major Frederick Clarke, C.A.M.C.; Captain Harry Dunlop, C.A.M.C.; Captain Bellenden Hutcheson, C.A.M.C.; Captain Gerald Grant, C.A.M.C.; James Barry, C.A.M.C.; Joseph Eagar, C.A.M.C.

The Distinguished Service Order has been awarded to Major Stanley G. Ross, of the Canadian Army Medical Corps, for taking

charge of collecting posts and advanced stations on three successive days.

The Distinguished Service Order has been awarded to Colonel Robert Mills Simpson, of the Canadian Army Medical Corps; when a sudden attack resulted in the capture of a village he personally dressed the wounds of men on the field and evacuated them all by the evening.

Colonel R. Percy Wright, mentioned in the New Year's honour list, and granted a C.M.G., achieved two promotions in the field, three mentions in despatches, a D.S.O., a staff appointment, and is now A.D.M.S. First Canadian Division. He was a medical student of McGill University.

The Bar to the Military Medal has been awarded to E. H. Code, Canadian Army Service Corps.

Dr. Mowat, McCormick, a Toronto physician, who went overseas in the C.A.M.C., and who has lately been a prisoner in Germany, has been released. He has just reached his home in Ottawa.

An order has just been issued by the Adjutant-General's branch at Military Headquarters, Ottawa, to the effect that no medical officers, not on full duty on the establishment of the Canadian Army Service Corps in the district will be permitted after December 31st, 1918, to wear uniform while in discharge of his ordinary military duties, or while pursuing his civic avocation. This order refers principally to medical and dental officers who do not devote their entire time to military duty.

Captain E. Joinville, of London, Ontario, has been attached to the Military Hospital Staff as eye, ear, and nose specialist. Dr. T. A. Carson, who recently returned from France, after strenuous service behind the lines, and has been on the medical staff at Brantford for the Militia, has been appointed to the Pensions Board of the Invalid Soldiers' Commission, with headquarters in Toronto.

Dr. G. Sterling Ryerson, founder and past president of the Canadian Red Cross Society, has resumed practice in Toronto after four years' work in France and England, and various parts of the American Continent, in the interests of the Canadian and American Red Cross Societies.

THE contributions received for France's Day Fund for Canada up to October 31st, 1918, for the French Red Cross, and remitted to the treasurer of the London, England, committee, are as follows: Alberta, $25,000.00; British Columbia, $2,702.76; New Brunswick, $5,156.25; Nova Scotia, $25,500.00; Ontario, $26,547.27; Quebec, $25,793.70; Saskatchewan, $25,200.30; making a total of $135,900.28. Manitoba is not included, as it paid its contribution direct to the French Red Cross.

THE following cable was sent to M. Poincare, President of France, by the Chairman of the Central Council, at the direction of the Executive Committee:

"I have the honour to inform you that the Canadian Red Cross Society desire you to accept a gift of fifty thousand pounds, which sum they wish you to have expended for the benefit of the refugee men, women and children of France. The funds are being cabled to our Commissioner in London, with instructions to forward to you."

Appointments:—Captain Robert Edmund Johnston, appointed Adjutant of the Spadina Military Hospital. Captain William Boyd McKechnie, posted for duty at the Vancouver Military Hospital. Captain Harold Dickson Courtenay is seconded for service with the Royal Canadian Naval Air Service. Lieutenant Ross Burt Taylor is posted for duty under the A.D.M.S., M.D. No. 5.

The following officers have been appointed to the Clearing Services Command:—

At Headquarters:—Lieutenant-Colonel Robert Harold Ker, to be A.D.M.S. Embarkation. Major Harold Brown Jeffs, M.C., to be D.A.D.M.S. Embarkation.

At Halifax:—Captain Edward Sheffield, to be Port Medical Officer. Captains L. N. Vandadaigue, S. H. Ratner, A. C. Robertson, F. J. Couglinh. Lieutenants C. L. Derrick, J. D. Chaput, R. J. Paquin, A. E. Dube, J. H. Lapointe, C. A. Bourdon, W. Morrish, E. D. Brown.

Halifax Depot:—Captain Charles C. Archibald, to be acting Embarkation Medical Officer. Major Stewart Sherwood Skinner is posted for duty at St. John Military Hospital. Captain Robert Henry Sheard is posted for duty under the A.D.M.S. M.D. No. 2, on ceasing to be employed with the B.C.R.M.

Promotions.—To be Captains:—Lieutenant Alexandre Zéphirin

Crépault, Lieutenant Sprague Murray Palmer, Lieutenant David Claw Wilson, Lieutenant Pierre Dupuis. Major Clarence Hamilton Morris to be Lieutenant-Colonel whilst employed as D.A.D.M.S., M.D. No. 6 (temp.). Captain William E. Struthers to be Major in the Reserve of Officers, C.E.F.

CASUALTIES

Died on Active Service

Nursing Sister L. M. Jenner, St. John, New Brunswick.
Nursing Sister V. B. Hennen, Saskatchewan.
Nursing Sister E. V. McKay, Galt, Ontario.

Died of Wounds

Captain Neville H. Little, C.A.M.C., Trenton, Ontario
F. T. Watts, C.A.M.C., London, Ontario.

Died

Nursing Sister Ainslie St. Clair, Winnipeg.
F. Galley, C.A.M.C., Montreal.
R. Lloyd Orr, C.A.M.C., London, Ontario.
J. Smith, C.A.M.C., Scotland.
R. Sheldon, C.A.M.C., England.

Book Reviews

The Ungeared Mind. By Robert Howland Chase, A.M., M.D., physician in chief, Friends Hospital (for Mental Diseases). 338 pages, illustrated. Price, $2.75. Publishers: F. A. Davis Company, Philadelphia, 1918.

"The Ungeared Mind" is not a book likely to have a large circulation either with lay or professional elements. It has little or no claim to scientific distinction and from the literary standpoint is not attractive. Just why it was published is a mystery, as it is without the sense of humour which might redeem, to a certain

extent, a hodge podge of so called psychiatric gossip. Possibly the foregoing statement is almost too severe as there are touches which are not devoid of humour, such as the following, "Warm and moist hands, after they have been long cold and dry, is a favourable sign."

A Manual of Otology. By Gorham Bacon, A.B., M.D., F.A.C.S., formerly professor of otology, College of Physicians and Surgeons, Columbia University, New York, assisted by Truman Laurance Saunders, A.B., M.D., assistant professor of laryngology and otology, College of Physicians and Surgeons, Columbia University. Seventh edition, revised and enlarged with 204 illustrations. Publishers: Lea & Febiger, New York and Philadelphia, 1918.

The issue of a seventh and revised edition of this well-known manual is evidence of the intrinsic merit of the work as a text-book. The present volume has been carefully re-edited, and the labyrinth receives the importance which it deserves, a result largely of the weight attached to its condition of health in the examination of candidates for the air service.

Surgery of the Spine and Spinal Cord. By Charles H. Frazier, M.D., Sc.D., professor of clinical surgery and surgeon to Hospital of University of Pennsylvania, with the collaboration of Alfred Reginald Allen, M.D., associate in neurology and neuropathology, University of Pennsylvania, Philadelphia. 922 pages with illustrations. Publishers: D. Appleton Company, New York and London, 1918.

This book by Dr. Charles H. Frazier, of the University of Pennsylvania, with the collaboration of Dr. A. R. Allen, of the neurological staff of the same university, represents the best and most complete monograph on the subject that exists in the English language, and, so far as the reviewer knows, in any language. It is in effect a classical monograph, and bids fair to be of permanent value for many years to come. In addition to the clinical chapters written by Dr. Frazier, are given four special chapters; one upon the "Anatomy of the spine and spinal cord", by Professor Piersol; one upon the "Normal and pathological physiology of the spinal cord", by Professor Allen; the third on the "Cerebrospinal fluid and its relation to spinal diseases", by Professor Kolmer; and the fourth on the "*X*-ray examination of the spine", by Professor

Pancoast. In order to give an idea of the rest of the contents of the book we append a list of the chapter headings. V. Spina Bifida; VI. Trauma; VII. Stab and Gunshot Wounds; VIII. Spinal Tumours; IX. Meningitis; X. Surgery of the Spinal Cord; XI. Technic of Rhizotomy; XII. Lumbar Puncture; XIII. Intraspinal Therapy; XIV. Spinal Anæsthesia; XV. Laminectomy; XVI. Chordotomy; XVII. Decompressive Laminectomy. There are some eight coloured plates and charts, and 378 illustrations, most of them original.

It is difficult to speak too highly of the general excellence of Dr. Frazier's book. Each of the subjects mentioned is treated thoroughly, and excellent bibliographies are added to each chapter. The subject of each chapter is considered exhaustively, and the writer's large experience and close study is combined with a consideration of the work of others to form a very satisfying whole. It is impossible to single out any particular chapter for special commendation, but it may perhaps be said that the one on the surgery of the roots for the relief of spasticity and of pain is exceptionally good. It is gratifying to be able to add that the work is written in excellent English.

Modern Operative Bone Surgery, with Special Reference to the Treatment of Fractures. By Charles George Geiger, M.D., 273 pages with 120 illustrations. Price, $3.00 net. Publishers: F. A. Davies Company, Philadelphia, 1918.

The name of Charles Geiger has hitherto been chiefly known to the profession as the deviser of a set of instruments electrically driven for use in bone surgery. In this he shares with several others the credit—and it is no small credit,—of furnishing to the general surgeon an apparatus without which the best work in modern bone surgery can hardly be done. It would perhaps hardly be fair to say that the book here under review was merely written around Dr. Geiger's set of bone instruments. It is true that a large part of the book, which is 275 pages of text with 116 illustrations, is devoted to the description of Dr. Geiger's technique in cutting bone inlays and intramedullary dowels and their transplantation; and that moreover the bulk of the work concerns the operative treatment of fractures by these methods. And it can be said that this part of the work is well done. The large number of illustrations are also clear and valuable, although it may be remarked in passing that it is rather curious to find so many of them taken from the late Dr. Murphy's skiagrams illustrating the value of common

nails in the fixation of fractures. This is rather in contradiction with the author's vehement defence of the autogenous bone graft.

There are several chapters reviewing the subject of the bone forming functions of the periosteum and the general repair of bone, consisting very largely of quotations from the work of men who have in recent years advanced our knowledge of this subject, ranging from Ollier through Macewen, Axhausen, and others, down to Phemister. It cannot be said that the author leaves the subject quite clear, as he seems to accept the conclusions formed by both sides of the "periosteal" controversy. Critical judgement is lacking, nor can the author's résumé of the work done in this field be considered as more than a mere résumé. The bibliography is entirely lacking, so that the book cannot be described as being a scientific presentation of our knowledge of bone surgery at the present day. Taken, however, as a piece of practical work and as a guide to the surgeon who desires to do first class operative work on bones, the book can be heartily recommended.

EQUILIBRIUM AND VERTIGO. By ISAAC H. JONES, M.A., M.D., laryngologist, Philadelphia General Hospital. With an Analysis of Pathological Cases by LEWIS FISHER, M.D., laryngologist and otologist, Mt. Sinaii Hospital, Philadelphia. Adopted as standard for medical division, Signal Corps, Aviation Section, by Surgeon-General, and Chief Signal Officer, U.S. Army. 432 pages with 130 illustrations. Price, $5.00. Publishers: J. P. Lippincott Company, Philadelphia, London, 201 Unity Bldg., Montreal, 1918.

The appearance of this volume from the pen of the man who has done more than any other to develop an interest in the bearing of pathological conditions of the labyrinth upon the capacity of those who fly in the air to maintain their equilibrium, will arouse widespread interest, and become of great value to those who will control the selection of the men who are to apply the art of flying to the needs of peace conditions. Many of the questions involved cannot be looked upon as settled, but this volume points the way to a world-wide investigation of supreme importance.

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CLINICAL OBSERVATIONS ON THE EARLY STAGES OF TRENCH NEPHRITIS

By Major G. S. Strathy, C.A.M.C.

Canadian Casualty Clearing Station

IN the last three years many reports on epidemic or trench nephritis have appeared in the medical literature, but as most of them have been written by medical officers who have observed the disease in base or home hospitals, they describe only the more severe cases and the later stages of the disease. In a year at this casualty clearing station about three hundred patients were admitted suffering from this disease and two hundred and five patients were admitted between December 1st and June 1st. The fact that patients in the earlier stages present a rather different clinical picture is the excuse for publishing this paper.

Epidemic nephritis is an affection which in most cases primarily affects the respiratory system, giving rise to cough and dyspnœa and sometimes sore throat. Symptoms due to affection of the urinary system usually arise later. When the kidneys are attacked, most of the symptoms of the nephritis of civil life occur, but toxic symptoms are comparatively rare during their stay in a casualty clearing station. When the kidneys are mildly affected it gives rise to albuminuria with few subjective symptoms. When the lower part of the urinary tract is attacked, hæmaturia is produced.

Not infrequently the lungs and pleuræ bear the brunt of the attack, and the disease is characterized by respiratory rather than kidney symptoms. In these cases bronchiolitis is usually marked, and hydrothorax develops in greater amount than is accounted for by disease of the kidney, and with no œdema elsewhere in the body, the pleural cavities may contain large quantities of fluid.

According to Major Dunn, R.A.M.C.,[1] the characteristic lesion present is a proliferative endarteritis of the small vessels. This is most marked in the lungs, brain, and kidneys, and may lead to multiple minute thromboses and embolism.

Ætiology

Although microbic infection is almost certainly the sine qua non of the disease, predisposing causes probably play an almost essential part. The disease is non-existent in troops before landing in France or other theatres of war, and is not present in the civilian population at home, nor have I heard of it amongst the civilians in France and Belgium. It would therefore appear as if there is some great predisposing factor in the life of the army abroad which prepares the way for infection. It is striking that cases have not broken out in England due to infection from returned soldiers.

The problem of the predisposing cause has given rise to many theories and suppositions. The epidemic is more prevalent on the western European front than the other fronts, but occurs to some extent on all fronts. It is more common amongst the British troops than the French. It occurs amongst all arms of the service at the front, and is not unknown amongst troops at the base. We had two cases in the personnel of eighty-five of this casualty clearing station, while we were four months in Boulogne. McLeod and Ameuille[2] found that albuminuria occurred in a high percentage of troops in training in England. They found that the percentage of men having albuminuria was higher amongst British than French troops. The urea excretion was also higher amongst the British.

Various theories have been advanced to explain these facts. Exposure and fatigue due to army life were suggested as the cause of so many men having albuminuria. Chlorinated water and immature beer were said to damage the kidneys. I have found nothing to suggest that they were predisposing causes of epidemic nephritis. Several men were affected who were sleeping in warm dry billets, and who did not do any heavy manual labour. Possibly the high protein diet of the British soldier predisposes him to attack. Of three hundred cases admitted to this casualty clearing station, only two were officers and they had very mild attacks. One of them was from the Royal Flying Corps and was living in comfortable quarters. My records do not show age as a predisposing factor. Very few men were attacked during their first three months

in France. Several Australians developed their first symptoms while on board ship coming from Egypt.

While there is probably some relationship between epidemic nephritis and the high percentage of albuminuria found in healthy troops both in France and England, it is almost certain that these cases of unexplained albuminuria are not mild cases of epidemic nephritis. It would seem likely that there is an extra strain thrown on the kidneys of the British troops which predisposes them to attack by a micro-organism which is prevalent in the army abroad.

Symptomatology

The symptoms divide the disease into three main clinical types, namely (*a*) mild cases with albuminuria and few subjective symptoms; (*b*) hæmaturia cases with symptoms pointing to affection of the lower part of the urinary tract and (*c*) nephritis cases with œdema. These three main types cannot always be sharply differentiated for mild or albuminuria cases may go on to the more marked type with œdema, or hæmaturia and œdema may be present in the same patient.

It is often difficult to differentiate mild cases of epidemic nephritis from albuminuria due to other causes. Captain Dixon, R.A.M.C.,[3] working in a divisional rest station near this casualty clearing station found albumen in the urine of over 20 per cent. of all patients admitted.

Various fevers, chronic infections of the urethra or bladder accounted for but a small proportion of this high incidence of albuminuria. The remainder of the 20 per cent. must be put down to the unknown factor in service, which causes albumen in the urine. In many mild cases of epidemic nephritis, there is no demonstrable œdema and albuminuria is the main objective symptom. In even these mild cases of the disease, however, there is usually cough, dyspnœa, dizziness and pain in the back, while the cases of albuminuria due to the unknown factor in active service have no subjective symptoms. The test on which most reliance is to be placed in differentiating these two conditions is blood pressure. Nearly all cases of mild nephritis even without œdema have an increased blood pressure in the early stages. Few, if any, of the other albuminurias have increased blood pressure. I have records of the blood pressure of several hundred soldiers in France, and have found that apart from cases of nephritis or cardio-vascular disease, the blood pressure of the British soldier when at rest is

remarkably constant. A diastolic blood pressure above 85 or a systolic pressure above 130 mm. Hg. is very rare in healthy soldiers under thirty-five years of age.

The following is a typical history of this type of nephritis: One of our operating room orderlies developed rhinitis, sore throat, hoarseness, and slight fever. He remained on duty and twelve days later these had almost disappeared but his face became œdematous, his urine showed a considerable amount of albumen, his temperature was 99°, and his systolic blood pressure 140. After rest in bed for forty-eight hours, all his symptoms, except slight albuminuria, had disappeared. In a month he was normal.

The second type, hæmaturia, is a small class. In six months, twenty-two patients were admitted to this casualty clearing station, diagnosed as hæmaturia. Most of these were cases of hæmaturia without œdema, for had all the patients with blood stained urine been sent in as hæmaturia, the numbers would have been much larger, and if all patients with red blood cells in the urine had been so diagnosed, nearly every case of nephritis would have had to be included, for microscopically examined, the urine of nearly all patients with moderate or severe nehpritis showed the presence of red blood cells.

Under the name of hæmaturia then I include only those cases in which hæmaturia was marked, and there was no œdema. These patients' most marked symptoms were referable to the lower urinary tract, *i.e.*, kidney pelves, ureters, and bladder. Pain in the lumbar region and flanks was usual. Pain over the bladder was not uncommon, frequency of micturition was the rule and tenderness on deep palpation in the hypogastrium present in a few cases. Fever was often high. The blood stained colour of the urine disappeared in a few days. Rise of blood pressure was not always present and was never marked.

The third clinical type comprising those usually sent to casualty clearing stations diagnosed as nephritis or bronchitis is the most important, for it includes all the severe cases. This type resembles in most respects the acute nephritis of civil life, but shows important differences. Bronchitis, œdema, hydrothorax and ascites are more marked features than are toxic symptoms such as headache, drowsiness, vomiting and convulsions. The lack of symptoms due to cerebral poisoning by chemical products is an outstanding feature in over 90 per cent. of the cases. Convulsions occurred in only five of our cases, yet many patients were in danger from the bronchitis and the mechanical effects of fluid in the thorax. Suppres-

sion of urine is seldom marked. There are rarely less than fifteen ounces in twenty-four hours. Rapid disappearance of acute symptoms is usual.

Œdema was one of the earliest symptoms in 30 per cent. of the cases of a severe type. Cough and dyspnœa were the first symptoms present in 72 per cent. of cases, and diarrhœa was the earliest symptom in 10 per cent. In many cases the patients had cough and dyspnœa for several days, and in some cases for three weeks before œdema appeared. Patients were seldom sent to hospital before the œdematous stage.

Nearly all the severe cases admitted were markedly dyspnœic, due to bronchiolitis fluid in the pleural sacs. This marked tendency to affection of the lungs and pleuræ and the unequal distribution of œdema in the body is the most outstanding feature of the disease in contrast to nephritis of civil life. So much is this so, that one doubts if the disease should be described as a nephritis, but rather as a proliferative endarteritis of the smaller vessels affecting different organs with varying severity in different cases.

Case No. 467 illustrates this severe type of lung infection: Pte. G., age twenty-five, gave a history of not feeling well for ten days. He had had slight œdema of the face and feet, shortness of breath, headache, and severe pains in the back. He was on duty until the day before admission. Admitted at 2 p.m., he was markedly dyspnœic, had much œdema of the head, but little elsewhere. Dry persistent cough which was not relieved by morphia gr. $\frac{1}{8}$. He died in nine hours.

At post mortem there was an acute bronchiolitis with about forty ounces of fluid in the right pleural cavity, about thirty ounces in the left and only eight ounces in the peritoneal cavity. Liver and spleen were much enlarged Kidneys were not swollen, slight congestion around pyramids, pale elsewhere. The spleen showed many minute hæmorrhages. This patient died from lack of gaseous exchange in his lungs.

Œdema of the face was present in all cases except one, and he gave a history of slight swelling of the face. This patient died without œdema appearing anywhere, and post mortem showed marked hydrothorax and very little ascites. A striking feature was lack of œdema in some of the bronchial type cases, and the patchiness of the œdema. The thighs sometimes showed marked swelling, when the legs were normal. The genitals seldom showed œdema. Ascites was present in thirty-eight cases, doubtful in six, detected in twenty-four. Hydrothorax was thought to be

present in forty-five cases, doubtful in five, and absent in eighteen. In a few doubtful cases an exploratory paracentesis was done and each time fluid was found. The spleen was palpable in thirty-three cases, thought to be enlarged as shown by percussion in six, and apparently not enlarged in thirty. Enlargement of liver and spleen occurred in a much lower percentage of cases early in 1915 than those admitted at a later date. The liver was felt below the costal margin in thirty-six patients and not felt in thirty-two. Albumen was found in the urine of all patients examined, but the percentage of albumen was not always proportionate to the severity of the case.

The temperature was always normal during stay in hospital in nineteen cases, and above normal in forty-seven. In most of the nineteen cases of normal temperature the patient was not admitted until over a week after the onset of symptoms and it is probable that they had fever before admission. None of the cases of bronchitis went on to a broncho-pneumonia.

During the acute stage of all cases, the blood pressure, diastolic and systolic, was taken once a day, and sometimes morning and evening. The systolic blood pressure was 135 or over in all but two cases examined. In one of these the diastolic pressure was raised but the systolic was normal. In the other, both were normal. In the most severe cases the pressure was always very high, 180 to 210 systolic, the diastolic 100 to 120. An anæroid sphygmomanometer was used. There was no apparent relationship between the blood pressure and the amount of albumen in the urine, but an interesting fact was that in the more severe cases the amount of subcutaneous œdema was usually inversely proportionate to the height of the blood pressure. In the patients with marked œdema, the systolic blood pressure averages 10 mm. lower than in those with moderate œdema.

The rise of blood pressure in the evening over that of the morning, reported by Abercrombie,[3] was not present in my experience.

In seven cases the pressure of the cerebro-spinal fluid was tested to see if headache was due to increased pressure. In four cases it was not increased, being between 120 and 130 mm. of water. In three of these the headache was severe, and two of them received no relief from withdrawal of fluid. The third had had a slight convulsion and fell asleep after the puncture was done.

In three cases the pressure of the spinal fluid was found to be increased. In two of these cases the headache was severe and in

one the headache was not eased by withdrawal of fluid until the pressure was normal. The other patient was unconscious following a severe convulsion. The third patient had no headache although his pressure was 230 mm. of water. There is apparently no connection between the headache of this disease and the pressure of the spinal fluid.

It was also found that the pressure of the blood and of the spinal fluid bear no relationship to each other, for removal of spinal fluid had no effect on the blood pressure unless the pressure of the spinal fluid was reduced to a dangerous degree, when a fall in blood pressure occurred.

The percentage of urea in the spinal fluid is probably of considerable importance, but to date I have tested so few cases that I cannot give an opinion. French workers have reported much increase in the urea in the spinal fluid in the uræmic type of case.

Treatment

With rest in bed and a simple diet of milk, and milk puddings, the large majority of cases improve rapidly. As we had to send our patients on as soon as they were fit to travel, I cannot speak of late results.

The symptoms calling for active treatment are cough, dyspnœa, decrease in urine, headache, and convulsions.

If a patient was markedly œdematous or his blood pressure high, a hot air bath was given. In nearly all cases this produced free sweating, relieved the cough and headache and decreased the œdema. The patients' bowels were kept fairly free with epsom salts, but patients were not severely purged. If the dyspnœa did not then subside and was severe, oxygen inhalations almost invariably gave considerable relief.

After losing two patients whose deaths were both directly due to the affection of the lungs and pleuræ, oxygen treatment was given to all cases of extreme dyspnœa and apparently carried several severe cases through, but when the dyspnœa was not relieved by oxygen and later when the use of oxygen was forbidden owing to shortage of oxygen supply, aspiration of the hydrothorax was carried out and immediate improvement resulted. One patient who was "in extremis" and appeared likely to die within five minutes, was aspirated. After the removal of the fluid, he was immediately improved and ultimately recovered. The hydrothorax did not recur.

Opium in any form for the relief of cough or sleeplessness I abandoned after some unhappy results from its use. It appeared to increase the patient's cyanosis.

For convulsions, spinal puncture and withdrawal of fluid was done in three out of four cases. The three recovered and the unpunctured patients died. The reason that withdrawal of fluid helps convulsions I cannot explain. It is not due, I believe, to decrease of the spinal pressure but probably to the removal of certain poisons in the fluid. French observers report excess of urea in the spinal fluid. The good results obtained by this method in delirium tremens, eclampsia and other convulsive conditions coincide with the results in the treatment of uræmic convulsions, and I believe it should be done either when an attack of convulsions is threatening or as soon after the first convulsion as possible. Morphia gr. $\frac{1}{4}$ was always given at the onset of a convulsion.

Prognosis

The mortality in the disease is everywhere reported as low. Three of our patients died. To judge of the seriousness of the disease in cases apparently cured we shall have to wait many years. Only then will we be able to judge if there is a tendency to pass into a chronic nephritis as in the acute nephritis of general practice.

References:

1. Dunn.—*Lancet*, November 18th, 1916. "Report of meeting of the Royal Society of Medicine."

2. McLeod, J. W. and Ameuille, P.—*Lancet*, September 9th, 1916, "Trench Warfare and Renal Secretions."

3. Abercrombie, R. G.—*Journal of the Royal Army Medical Corps*, August, 1916, "Observations on the Acute Phase of five hundred cases of War Nephritis."

THE ECONOMIC EFFECTS OF DISABLEMENTS

By J. L. Biggar, M.B., Lieut.-Col., R.O.

TWO enquiries have recently been made into the economic effect of disablements. In view of the present importance of this subject, the conclusions arrived at deserve the widest publicity.

One of these investigations covered all the disabled people—men, women and children—in Cleveland, Ohio. The other included men injured by the loss of an extremity from industrial accidents in Massachusetts. The conclusions arrived at in both fields were in remarkable agreement.

Before these are discussed, however, it must be noted that the individuals whose histories have been studied have reacted under the usual social conditions. No provision of any material value has existed for their betterment. They have succeeded or failed "on their own". It has not been realized that it is to any one's interest that the best, economically speaking, should be done for them.

The State has, until the war, apparently failed to appreciate that a self-supporting citizen is a genuine and valuable asset; that one who fails in this respect is a genuine and expensive debit; and that the cost to the State of rehabilitation is considerably less than the cost of idleness.

This failure may perhaps be explained by the fact that the cost of idleness has been heretofore borne largely by private charity, and that the individualistic system has obscured the importance of communal responsibility.

In investigating the economic handicap resulting from any disabling condition, two facts stand out with the utmost clearness.

First, the degree of disablement is found to be of very much less importance in the individual case than is the character of the person disabled. The same disability will spur one man to efforts for economic betterment which, uninjured, he would have been unlikely to have attempted; but will so influence another that he gives up entirely his struggle for independence, and ekes out a miserable existence on charity, In short, the mental attitude of the cripple is of infinitely greater importance than his particular degree of disability.

Second, people generally are inclined to look with some disfavor upon the crippled, perhaps by an instinctive reaction. In this attitude the disabled man meets with the greatest obstacle to the regaining of his economic independence. Until it is modified, his efforts towards self-support will be less effective, whatever his remaining occupational skill, than those of the whole.

Employers' liability legislation, calculated to benefit the worker, militates in some respects against his re-employment after injury. His application for employment will not be so readily entertained when a subsequent injury, to which he is perhaps more liable than a whole man, may cost the employer heavily in compensation.

It is obvious from the above facts that two distinct goals must be attained if the soldiers, disabled in the war, are to react satisfactorily to economic conditions. In gaining these, the influence of the medical profession properly exercised will be of inestimable value.

1. The disabled man must be encouraged in every way possible properly to appreciate his opportunities and his duties.

The former exist in the Vocational Training Schools, for which the best possible instructional staffs have been obtained; in the government employment services, by which these men are placed in the best possible employments; and in the pension system by which the actual amount of the economic detriment, so far as it can be calculated in the present state of knowledge, is awarded for each disability. The latter consist in the facts that the economic reaction of the disabled man to his disability is largely a matter of his mental attitude, that his economic independence is not only to his own immense advantage, but is also a duty he owes to the state; and that society, preserved by his efforts in the field, needs his energies at home for its continued progress and prosperity.

2. The public must be educated out of its unwarranted attitude towards the cripple; legislation that militates against his economic success must be modified; and his employment, under such state regulations as have been approved in Great Britain, France and Italy, may have to be made compulsory. Other advantages, such as life, accident, and sickness insurance which he cannot obtain from private companies, will have to be provided by the Government.

It must be realized by all that the continuance of a free and democratic government is in part the effect of the activity of each disabled man met with; and that his are indeed "honorable scars".

THE ROLE OF THE THYMUS GLAND IN EXOPHTHALMIC GOITRE

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IN an attempt to determine whether an excess of the product of thymus activity in the circulating blood could cause exophthalmic goitre or not the experiments to be described in this paper were performed. Eight apparently normal rabbits were selected and divided into three groups. One group, consisting of two rabbits, served as a control. The remaining six rabbits received hypodermic injections of thymus gland substance at fixed intervals. One group of three rabbits was given the thymus substance in the proportion of 5 mgm. per kilogramme of body weight, and the remaining three in the proportion of 10 mgm. per kilogramme. The thymus gland substance used was that prepared by Armour & Company. In order to obtain a solution satisfactory for subcutaneous injection the amount of gland substance required for the treatment of all the rabbits on one day was rubbed up with 5 c.c. of sterile glycerine and diluted with sterile physiological saline solution so as to make a solution containing 5 mgm. of thymus substance in 1 c.c. After having been warmed the proper dose for each rabbit could be readily injected. At the same time that the thymus was administered 2 c.c. of warm sterile physiological saline solution were given hypodermically to the control rabbits. No infection occurred in any of the rabbits and very slight induration was produced.

The rabits were fed and cared for under our personal supervision and the diet and environment were as uniform for all as it was possible to obtain. The control rabbits were known as No. 1, a male, and No. 2, a female. The rabbits receiving 5 mgm. of thymus per kilogramme of body weight were No. 3, a male, and Nos. 4 and 5, females. The rabbits receiving 10 mgm. of thymus per kilogramme were No. 6, a male, and Nos. 7 and 8, females. No. 4 and No. 5 became pregnant. This fact is of interest as the inception

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of the pregnancies was after the administration of thymus was begun and is in accord with the statement of Schäfer[1] that no relationship has been established between the thymus and the generative glands in the female. The experiments extended from December 10th, 1917 to February 4th, 1918, and rabbit No. 4 gave birth to a litter of one on January 28th, 1918, and rabbit No. 5 to a litter of four on January 23rd, 1918. All of the new-born rabbits died soon after birth.

During the period of eight weeks that the experiments lasted forty injections were given to each rabbit. In the first two weeks, injections were made every day; in the second two weeks, three times a week; in the third two weeks, every day; and in the last two weeks, three times a week. The routine procedure was as follows: Each rabbit in turn was removed from the cage, weighed, pulse rate counted, width of palpebral fissure measured, the general condition of the animal noted with especial reference to glandular enlargement, and the proper dose injected. To determine the width of the palpebral fissure the rabbit was allowed to rest quietly in the special box used for weighing and a millimeter scale fixed so that the measurement could be made without attracting the attention of the animal or disturbing it in any way. In order to eliminate individual error the various observations were made from day to day by a number of persons, members of the staff and students, without reference to the existing records. The weekly averages of the above determinations on each rabbit are given in Tables 1, 2 and 3.

TABLE 1

CONTROL RABBITS

Dose: 2 c.c. of physiological saline solution hypodermically

	Animal	1st week average	2nd week average	3rd week average	4th week average	5th week average	6th week average	7th week average	8th week average
Weight in gm. . .	No. 1	1992	2104	2275	2347	2416	2311	2462	2614
	No. 2	1786	1791	1802	1830	1797	1757	1845	1857
Pulse rate per min. .	No. 1	185	204	204	200	212	208	200	200
	No. 2	195	200	206	180	200	196	204	200
Width of palpebral fissure in mm. .	No. 1	10·0	10·0	9·5	9·0	9·0	10·0	9·0	10·0
	No. 2	8·6	9·0	8·5	9·0	11·0	10·0	9·0	10·0

TABLE 2

THYMUS RABBITS

Dose: 5 mgm. of thymus substance per kilogramme of body weight hypodermically

	Animal	1st week average	2nd week average	3rd week average	4th week average	5th week average	6th week average	7th week average	8th week average
Weight in gm.	No. 3	1574	1657	1735	1785	1779	1860	1911	2000
	No. 4	1695	1758	1887	1878	1930	2088	2280	2108
	No. 5	1696	1798	1936	1983	2052	2138	2088	2218
Pulse rate per min.	No. 3	207	196	206	208	208	196	200	212
	No. 4	200	208	218	200	204	208	220	200
	No. 5	207	200	199	204	204	208	200	204
Width of palpebral fissure in mm.	No. 3	9·0	9·5	10·0	10·5	10·0	9·0	10·0	10·0
	No. 4	10·0	9·0	9·5	10·0	10·0	11·0	11·0	11·0
	No. 5	9·6	11·0	11·0	11·0	11·0	11·0	11·0	11·0

TABLE 3

THYMUS RABBITS

Dose: 10 mgm. of thymus substance per kilogramme of body weight hypodermically

	Animal	1st week average	2nd week average	3rd week average	4th week average	5th week average	6th week average	7th week average	8th week average
Weight in gm.	No. 6	1729	1739	1804	1737	1833	1902	1973	2015
	No. 7	1898	1984	2042	2033	1929	1918	2013	2080
	No. 8	2150	2132	2169	2130	2170	2199	2215	2239
Pulse rate per min.	No. 6	199	198	208	200	208	208	212	220
	No. 7	199	195	208	200	200	220	216	220
	No. 8	203	206	200	208	212	216	212	212
Width of palpebral fissure in mm.	No. 6	7·6	8·5	9·0	9·0	9·0	10·0	10·0	10·0
	No. 7	10·6	10·5	11·0	11·0	10·0	11·0	11·0	11·0
	No. 8	10·3	10·5	10·5	10·0	11·0	12·0	11·0	12·0

Reference to these tables will show that the change in the pulse rate of the control rabbits was from 190 per minute in the first week to 200 in the eighth week, an increase of 5·26 per cent. In the group receiving 5 mgm. of thymus substance per kilogramme

the increase was from 204·66 to 205·33, or 0·32 per cent., and in the group receiving 10 mgm. per kilogramme it was from 200·33 to 217·33, or 8·48 per cent. In the control rabbits the palpebral fissure increased in width from 9·3 to 10 mm., or 7·52 per cent.; in the first group of thymus rabbits from 9·53 to 10·66 mm., or 11·85 per cent., and in the second group of thymus rabbits from 9·5 to 11 mm., or 15·79 per cent. All of our rabbits gained in weight during the course of the experiment. In the attempts of Carlson, Rooks and McKie[2] to produce experimental hyperthyroidism by the feeding of thyroid, loss of body weight was one of the most constant symptoms in all the animal groups. The rabbits used by them showed an average loss of weight of 38 per cent. A further fact noted by us was that the fur of rabbits 6, 7 and 8 became dull, lustreless, during the sixth week of the experiment and continued in the same condition to the end.

Three days after the last injection rabbits 1, 2, 6 and 8 were killed and autopsies performed. The method employed was that of Livingston[3] in which the animals are killed by the inhalation of illuminating gas, weighed, the urine expressed, reweighed and suspended head downward with both carotid arteries and jugular veins cut. After the removal of as much blood as possible, an abdominal incision is made in the median line and the gastro-intestinal tract from the cardia to the anus excised. This is weighed, its contents expressed, and reweighed. The weight of the contents of the stomach and intestine thus obtained is subtracted from the weight of the body after the urine has been expressed and the figure resulting constitutes the reduced body weight. Comparison of the size of any organ may then be made in grammes or milligrammes per kilogramme of reduced body weight. The results of the autopsies are given in Table 4.

TABLE 4

Animal	Weight when killed	Weight minus urine	Weight of gastro-intestinal tract and contents	Weight of gastro-intestinal tract minus contents	Reduced body weight R. B. W.	Weight of thyroids in mgm. per kilo. of R. B. W.
No. 1	2649	2649	451	304	2502	86·3
No. 2	1867	1844	299	179	1724	64·3
No. 6	2033	2023	322	199	1900	82·1
No. 8	2239	2235	325	178	2088	81·4

The average weight of the thyroid glands in the control rabbits was 75·3 mgm. per kilogramme of reduced body weight and in the two thymus rabbits brought to autopsy it was 81·75 mgm. per kilogramme. The latter were 8·57 per cent. heavier than the former, which is within the limits of normal variation as established by Livingston.[4] In the four animals examined at autopsy the thymus was distinct but practically the same in all. The spleens of the thymus rabbits were not enlarged as compared with the control animals. The cervical glands of No. 8 were very prominent.

In reviewing this series of experiments we see no evidence of the production of symptoms characteristic of exophthalmic goitre by the thymus gland substance employed.

The fact that enlargement of the thymus gland occurs in exophthalmic goitre was first noted by Markham.[10] In 1888 Marie[5] suggested that there might be a reactivation of the thymus gland in this disease. In view of the work of Waldeyer[6] it seems probable that there is not a reactivation of the thymus but rather an increase of its activity. He states that even in advanced age, a considerable amount of thymus tissue persists and probably maintains its function. This is confirmed by Hammar,[7] who says that the organ continues to grow until puberty, reaches its greatest development between the fourteenth and sixteenth years, and functions still later though losing weight, with true atrophy and elimination of function at fifty or sixty years of age. As he further points out, it is at this period of life that thyroid function also decreases.

In 1895 v. Mikulicz[8] called attention anew to the occurrence of a persistent and hyperplastic thymus with the enlarged thyroid of Basedow's disease and noted that the cases in which this association was found were the grave ones. Of the pathological anatomical findings in this disease Biedl[9] states enlarged thymus to be one of the commonest. This finding is substantiated by the report of Bonnet[39] who records twenty-eight cases of persistent thymus in exophthalmic goitre with hyperplasia of the gland in four out of six cases that had a sudden fatal termination. These observations are confirmed and emphasized by v. Hansemann[49] who says, "The hyperplasia of the thymus in many cases of Basedow's disease is not accidental."

Capelle[58] reports the autopsy findings in sixty-one cases of exophthalmic goitre of which three are his own and the others collected from the literature. Seventy-nine per cent. of these show an enlarged thymus. He also records the presence of a hyperplastic thymus gland in 95 per cent. of those dying from "heart failure"

during or shortly after an operation on the thyroid gland for the relief of exophthalmic goitre. Matti[73] in one hundred and thirty-three cases of exophthalmic goitre finds the thymus hyperplastic in ninety-eight, or 74 per cent. A. Kocher[82] finds a similar condition in 71·4 per cent. of his cases. We have been able to gather from the literature reports of two hundred and forty separate cases of exophthalmic goitre in which definite mention of the thymus is made. These show an enlarged or persistent thymus gland in two hundred and one, or 83·75 per cent. Numbers 10 to 90 inclusive of the Bibliography give the authors who have reported these cases.

As a result of the repeated observation by surgeons and other investigators of the presence of an enlarged and hyperplastic thymus gland in Basedow's disease, Rehn[91] suggested that it might be well to attack the organ surgically in this disease. Hart[92] appears to have been the first to advance the idea that hyperactivity of the thymus could cause the clinical picture of Graves' disease. This assertion has been supported by many who are interested in the subject of exophthalmic goitre and most of the evidence is based on the results of treatment of patients suffering from that disease. Nordmann[83] states that hyperfunctioning of the thymus causes exophthalmic goitre or aggravates the symptoms. He reports eighteen cases with three fatalities, all of the latter having enlarged thymus. Sinorzersky[93] studied twenty cases of exophthalmic goitre with the object of determining what influence the thymus had in its production. He treated these cases by the Roentgen rays directed toward the thymus gland and found that an amelioration of all the symptoms resulted. His conclusion is that the thymus plays a part in the pathogenesis of exophthalmic goitre. Matti[94] states that he believes that the thymus and thyroid are directly concerned in the production of exophthalmic goitre and that the thymus changes are directly co-ordinate with and parallel to changes in the thyroid.

Halsted[79] states that he has performed probably six hundred and fifty operations upon about five hundred patients with Graves' disease. Removal of one lobe of the thyroid has resulted in an approximate cure in 60 per cent. of his cases, but 70 or 80 per cent. still manifested symptoms of overactivity of the thyroid or thymus or of both these glands. In forty-seven cases where he has found it necessary to remove both lobes of the thyroid all but three of those that have returned for examination show a normal blood picture. This is not in accord with the findings of Klose[95] and

others who believe that the symptoms of Graves' diseases may disappear after thyroidectomy, but that the disordered blood picture remains unchanged, and hence if we desire a hæmatological cure we must attack, surgically, the thymus. In spite of this disagreement in the results Halsted is of the opinion that the thymus gland may play an important part in exophthalmic goitre and in some cases assume the title rôle.

One of the most striking cases is that reported by v. Haberer[80] of a man who presented himself in an apparently dying condition. He was cyanotic, dyspnœic, covered with a cold sweat and without perceptible pulse in the peripheral arteries. There was marked exophthalmos, the lungs were œdematous and the heart and liver greatly enlarged. During the preceding year one lobe of the thyroid had been removed and subsequently the thyroid arteries to the other lobe had been tied. v. Haberer removed from behind the manubrium a piece of tissue three centimetres long and one-half centimetre thick, which resembled fat and macroscopically seemed to contain no thymus gland. The patient's condition began to improve at once and in three months his condition was eminently satisfactory. He declared that he felt perfectly well. An almost identical case is reported by Stettin[87]. His patient, a girl of nineteen, also had had a hemistrumectomy without benefit. Her condition at the time of operation was most precarious, but she showed the same remarkable improvement after the excision of a fatty mass from behind the sternum, proved by microscopical examination to contain thymus tissue. Thymectomies, usually with an accompanying thyroidectomy, have been performed by Garre[71], Capelle and Bayer[76], A. Kocher[82], Crotti[106] and others, with marked improvement in the results. Crotti states particularly that in every goitre operation he searches the mediastinum for thymus tissue, always removing any found. He is positive that this procedure renders the post-operative course smoother and greatly reduces the mortality.

Waters[96] treated in Johns Hopkins University Hospital sixty cases of exophthalmic goitre by Roentgen rays directed toward the thymus gland. The treatments were given in series of six doses. Sixteen patients received the full treatment of three series, and of these eight were apparently cured, seven showed marked improvement and one failed to respond to treatment. Nine cases received two series of doses, two were cured, five improved, two not improved. The remaining cases had not received sufficient treatment to warrant drawing any definite conclusions. Pfahler and Zulick[97],

as the result of their experience, also believe that treatment of exophthalmic goitre by the Roentgen rays should be directed toward both the thymus and thyroid.

Stewart[90] believes that there is not sufficient evidence that an overacting thymus alone is the cause of Basedow's disease. He considers it reasonable to conclude that there are cases in which the thyroid gland alone is responsible and that there are cases in which both the thyroid and thymus glands are responsible.

This problem has also been attacked from the experimental side. The researches of Svehla[98], Basch[99], Hammar[100] and Stöhr[101] have established the fact that the thymus is no longer to be considered simply as a part of the lymphatic system, but that it must be regarded as a true gland with an independent internal secretion. Cunningham[102] reports experiments on dogs from which he concludes that the thyroid and thymus both yield substances capable of palliating the acute cachexia in totally thyroidless dogs. Bircher[103] has twice produced the typical Basedow picture by the intraperitoneal implantation of fresh, pathologically hyperplastic thymus. Halverson, Bergeim and Hawk[104] tested the action of thyroid and thymus gland substances (Armour) upon metabolism in a case of exophthalmic goitre by administering them with the food. They found that the thyroid stimulated metabolism with retention of calcium, magnesium and nitrogen; the thymus substance, on the contrary, depressed the stimulating effect of the thyroid on metabolism. They think that possibly the two glands are antagonistic.

In making inquiry into the part taken by the thymus gland in exophthalmic goitre one is impressed by the paucity of what might be termed purely experimental work, *i.e.*, animal experimentation. The greater part of the observations has been made by clinicians.

Summary

The review of the literature that has been presented indicates that there is a connection between the thymus gland and exophthalmic goitre, but what the nature of that connection is has not yet been discovered. It is possible that the thymus acts independently of the thyroid in producing Basedow's disease; excited to hyperplasia and hypersecretion by external influences, it causes the group of symptoms that constitute this disease. It is also possible that, because of a dependent relationship between it and

the thyroid, it becomes hyperactive as the result of increased activity of that gland, adding its harmful influence to that exerted by the abnormally functioning thyroid; or, its hyperplasia and hypersecretion may be the result of an effort to render harmless the toxic products of the thyroid. Still another conception of the ætiology of Graves' disease that must not be overlooked is that suggested by Crile[105], viz., that neither the thyroid nor thymus is primarily at fault, but that there is a third cause, which is unknown, and that the changes observed in these glands and the symptoms attributed to alteration in their function are the result of the operation of this unknown factor. An array of facts can be marshalled in support of each of the hypotheses mentioned, all waiting for the discovery that will harmonize them and make clear the present apparent contradictions.

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BIBLIOGRAPHY

1. Schäfer: "The Endocrine Organs," 1916, 48. 2. Carlson, Rooks and McKie: *Amer. Journ. Physiol.*, 1912, xxx, 129. 3. Livingston: *Amer. Journ. Physiol.*, 1916, xl, 161. 4. Livingston: *Amer. Journ. Physiol.*, 1916, xl, 174. 5. Marie: Quoted by Marine and Lenhart, *Arch. Int. Med.*, 1911, viii, 266. 6. Waldeyer: *Verhandlung. d.* 10 *internat. med. Conn.*, Berlin, 1891, 15. 7. Hammar: *Verhandlung. d. anatom. Gesellschaft a. d.* 19 *Versammlung*, Geneva, 1905, 1. 8. v. Mikulicz: *Berlin. klin. Wochenschr.*, 1895, xxxii, 16. 9. Biedl: "The Internal Secretory Organs," 1913, 96. 10. Markham: *Trans. Pathol. Soc. London*, 1858, ix, 163. 11. Goodhart: *Trans. Pathol. Soc. London*, 1874, xxv, 240. 12. Eger: *Deutsch. med. Wochenschr.*, 1880, vi, 13. 13. Möbius: *Memorabilien*, 1881, xxxi, 449. 14. Johnston: *Journ. Mental Sc.*, 1884, xxx, 521. 15. White: *Brit. Med. Journ.*, 1886, ii, 151. 16. Mosler: *Krankenvorstellung*, Greifswald, 1889, ii, 6. 17. Lasvènes: *These d. Paris*, 1891, ccii, 1. 18. Spencer: *Lancet*, 1891, i, 543. 19. Mendel: *Deutsch. med. Wochenschr.*, 1892, xviii, 5. 20. Hezel: *Deutsch. Zeitschr. f. Nervenheilkunde*, 1893, iv, 353. 21. Marie and Marinesco: *Revue Neurol.*, 1893, i, 10. 22. Reymond: *Bull. d. l. Soc. anatom. d. Paris*, 1893, vii, 456. 23. Glück: *Berlin. klin. Wochenschr.*, 1894, xxxi, 672. 24. Gürlt: *Arch. f. klin. Chir.*, 1894, xlvi, 55. 25. Schnitzler: *Wien. klin. Wochenschr.*, 1894, vii, 337. 26. Siegel: *Berlin. klin. Wochenschr.*, 1896, xxxiii, 887. 27. Mattiessen: "Inaugural Dissertation," Erlangen, 1896. 28. Röper: "Inaugural Dissertation," Leipzig, 1896. 29. Farner: *Virchow's Arch.*, 1896, cxliii, 509. 30. Steinlechner: *Wien. klin. Wochenschr.*, 1896, ix, 5. 31. Hämig: *Arch. f. klin. Chir.*, 1897, lv, 1. 32. Debove: *Schmidt's Jahrbüch.*, 1897, cclv, 132. 33. Mackenzie and Edmunds: *Trans. Pathol. Soc. London*, 1897, xlviii, 192. 34. Soupault: *Soc. anatom., Gaz. hebdom.*, 1897, ix, 15. 35. Hirschlaff: *Zeitschr. f. klin. Med.*, 1898, xxxvi, 200. 36. Benvenuti: *Schmidt's Jahrbüch.*, 1898, cclviii, 127. 37. Schürmann: "Inaugural Dissertation," Kiel, 1898. 38. Schiller: *Beiträg. z. klin. Chir.*, 1899, xxiv, 535. 39. Bonnet: *Province med.*, 1899, xxxvi, 1. 40. Reinbach: *Mitteil. a. d. Grenzgeb. d. Med. u. Chir.*, 1900, vi, 199.

41. Dinkler: *Arch. f. Psychiatrie u. Nervenkrankheit*, 1900, xxxiii, 335. 42. Delius "Inaugural Dissertation," Kiel, 1901. 43. Schulz: *Beiträg. z. klin. Chir.*, 1901, xxx, 638. 44. Bodensteiner: "Inaugural Dissertation," München, 1901. 45. Redzior and Zanietowski: *Neurol. Centralbl.*, 1901, xx, 438. 46. Kocher, A.: *Mitteil. a. d. Grenzbeg. d. Med. u. Chir.*, 1902, ix, 1. 47. Nettel: *Arch. f. klin. Chir.*, 1904, lxxiii, 637. 48. Thorbecke: "Inaugural Dissertation, 11 Heidelberg, 1905. 49. v. Hansemann: *Berlin. klin. Wochenschr.*, 1905, xlii (Fest. 44a), 65. 50. Ewing: *Proceed. New York Pathol. Soc.*, 1906, vi, 172. 51. Rehn: *Arch. f. klin. Chir.*, 1906, lxxx, 468. 52. Schultze: *Mitteil. a. d. Grenzgeb. d. Med. u. Chir.*, 1906, xvi, 161. 53. Gierke: *Münch. med. Wochenschr.*, 1907, liv, 775. 54. Mönckeberg: *Deutsch. med. Wochenschr.*, 1907, xxxiii, 1278. 55. Boit: *Frankfurt. Zeitschr. f. Pathol.*, 1907, i, 1. 56. Rössle: *Münch. med. Wochenschr.*, 1908, lv, 377. 57. Schraube: "Inaugural Dissertation," München, 1908. 58. Capelle: *Beiträg. z. klin. Chir.*, 1908, lviii, 353. 59. McCardie: *Brit. Med. Journ.*, 1908, ii, 196. 60. Röble: Quoted by Matti, *Deutsch. Zeitschr. f. Chir.*, 1912, cxvi, 454. 61. Graupner: *Münch. med. Wochenschr.*, 1910, lvii, 1695. 62. Gebele: *Beiträg. z. klin. Chir.*, 1910, lxx, 20. 63. Papenheimer: *Journ. Med. Research*, 1910, xxii, 1. 64. Simmonds: *Deutsch. med. Wochenschr.*, 1911, xxxvii, 1264. 65. Fränkel: *Deutsch. med. Wochenschr.*, 1911, xxxvii, 1291. 66. Koch: *Deutsch. med. Wochenschr.*, 1911, xxxvii, 1102. 67. v. Eiselsberg: *Münch. med. Wochenschr.*, 1911, lviii, 980. 68. Riedel: *Münch. med. Wochenschr.*, 1911, lviii, 980. 69. Küttner: *Münch. med. Wochenschr.*, 1911, lviii, 980. 70. Schultze: *Münch. med. Wochenschr.*, 1911, lviii, 980. 71. Garré: *Münch. med. Wochenschr.*, 1911, lviii, 979. 72. Hildebrand: *Münch. med. Wochenschr.*, 1911, lviii, 980. 73. Matti: *Deutsch. Zeitschr. f. Chir.*, 1912, cxvi, 425. 74. Kocher, Th.: Quoted by Matti, *Deutsch. Zeitschr. f. Chir.*, 1912, cxvi, 454. 75. Pettavel: *Deutsch. Zeitschr. f. Chir.*, 1912, cxvi, 488. 76. Capelle and Bayer: *Beiträg. z. klin. Chir.*, 1913, lxxxvi, 509. 77. Crotti: *Journ. Amer. Med. Assoc.*, 1913, lx, 117. 78. Crotti: *Journ. Amer. Med. Assoc.*, 1913, lx, 571. 79. Halsted: *Bull. Johns Hopkins Hosp.*, 1914, xxv, 223. 80. v. Haberer: *Mitteil a. d. Grenzgeb. d. Med. u. Chir.*, 1914, xxvii, 199. 81. Pettavel: *Mitteil. a. d. Grenzgeb. d. Med. u. Chir.*, 1914, xxvii, 694. 82. Kocher, A.: *Arch. f. klin. Chir.*, 1914, cv, 924. 83. Nordmann: *Arch. f. klin. Chir.*, 1914, cvi, 172. 84. Rautmann: *Mitteil a. d. Grenzbeg. d. Med. u. Chir.*, 1915, xxviii, 489. 85. Mackenzie: *Lancet*, 1916, cxci, 815. 86. Mackinnon: *Brit. Med. Journ.*, 1916, ii, 488. 87. Stettin: *Med. Record*, 1916, lxxxix, 580. 88. Hoxie: *Arch. Int. Med.*, 1917, xix, 564. 89. Speed: *Surg. Clinics*, Chicago, 1917, i, 643. 90. Stewart: *Penn. Med. Journ.*, 1917, xx, 751. 91. Rehn: Quoted by Halsted, *Bull. Johns Hopkins Hosp.*, 1914, xxv, 226. 92. Hart: *Münch. med. Wochenschr.*, 1908, lv, 668. 93. Sinorzersky: Quoted by Pfahler and Zulick, *Penn. Med. Journ.*, 1916, xix, 662. 94. Matti: *Berlin. klin. Wochenschr.*, 1914, li, 1365. 95. Klose: Quoted by Halsted, *Bull. Johns Hopkins Hosp.*, 1914, xxv, 231. 96. Waters: *Journ. Amer. Med. Assoc.*, 1915, lxiv, 1392. 97. Pfahler and Zulick: *Penn. Med. Journ.*, 1916, xix, 661. 98. Svehla: *Wien. med. Blatt.*, 1896, xix, 149. 99. Basch: *Wien. klin. Wochenschr.*, 1903, xvi, 893. 100. Hammar: *Anatom. Anzeig.*, 1905, xxvii, 23. 101. Stöhr: *Anatom. Heft.*, 1906, xxxi, 407. 102. Cunningham: *Journ. Exper. Med.*, 1898, iii, 147. 103. Bircher: *Ergeb. d. allgem. Pathol. u. pathol. Anatom.*, 1911, xv, 1. 104. Halverson, Bergeim and Hawk: *Arch. Int. Med.*, 1916, xviii, 800. 105. Crile: *Canad. Med. Assoc. Journ.*, 1917, vii, 727. 106. Crotti: "Thymus and Thyroid," 1918, 555.

MAN'S PLACE IN NATURE

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MAN occupies a peculiar position in the household of nature to-day. He is neither master nor servant in the house, master it may be for a time, servant for a time, rebel all the time. Man's defiance of nature commences at birth and ends only with the grave. Nature leaves for him no choice.

No sooner has he left his mother's womb than his enemies of the bacterial world compass him about. In armies whose strength none can estimate, they camp along his line of march, break through the weak points in his defence, burden him with fears and suffering, cripple and deform where they cannot destroy. Such is the course of events in the first of the three periods of man's terrestrial existence.

During the second period these extrinsic agencies, disordered and discomfited, give up the fight to a great extent, and man is permitted to enjoy for a few years relative immunity from disease. Still even here he cannot disband the guards. A merciless epidemic may sweep over his path at any time.

In the early part of the third period, a new enemy appears on the scene, but this time from within. Man's vital forces begin to show the strain of the wear and tear to which they have been subjected. No longer is seen the beautiful metabolic equipoise of earlier life. The beam tilts heavily towards the disintegrating forces and the dawn of dissolution day is not far distant.

Life for man, from the cradle to the grave, is one unceasing struggle.

Nor does the contest with nature end with the physical. For the free development of man's very virtues he has had to contend with nature. Cleanliness is next to godliness. Cleanliness is godliness, yet the child by nature loves the dirt, the lower classes revel in it all their days, the vast majority of the

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human race are indifferent to it, yet cleanliness is one of the essential virtues—one on which the very existence of the human race depends. Veracity is another acquired virtue, a virtue belonging to civilized man though not always practised by him. Savages are all liars. Or take such a virtue as courage: no man by nature is courageous. He may be pugnacious, but consistent courage is always the effect of cultivation. The same may be said of such virtues as unselfishness, chastity and many others. All have been acquired in the building up of our civilization, and in open conflict with nature. Were man to follow blindly his instincts and natural desires he would simply return to the life and habits of the savage.

Nature, in relation to man, has a two-fold office—the beneficent and the maleficent. Nothing is more beautiful than physiological growth—the beneficent; nothing is more hideous than the pathological—the cancerous—the maleficent. Elementary forces may be beneficent at one time and maleficent at another. The wind that drives the ice-boat so gaily on the harbour to-day may unroof our house to-morrow. Man's only hope lies in lining up his forces with those of beneficent nature and so controlling the latter that they may best serve his every increasing needs. With his enemies—the malefactors—he must wage incessant warfare, and with all his strength, since death is the penalty of failure.

But what has man been doing? At his worst he has courted the Delilah of the enemy and paid the penalty for his folly. At his best, he has formed alliances, offensive and defensive, with the beneficent forces of nature, much to the advantage of the race, but in so doing he has brought about new conditions and new problems.

He has produced not only for himself, but for all living organisms associated with him, such a special state of things by his open defiance of Nature's pre-human dispositions that he stands spell-bound, unable to turn back, afraid to advance, but advance he must or perish.

Two questions arise:

1. How far is man responsible for the relationship existing between nature and man to-day?

2. Is the control of nature man's destiny?

1. Man's responsibility:

Man's mental qualities so far transcend the rudimentary conditions traceable in the best of his animal associates, e.g. the

horse and the dog, that one is compelled to the view that man forms a distinct departure in the gradual unfolding of nature's predestined scheme. He is the only animal that appears to be aware of the world drama in which he is called upon to play a part. His mental development has, in fact, cut him off to some extent from the general operation of the process of natural selection, and in so doing has added much to his responsibility. It has given him ten talents where he had but one.

In extra-human nature there is no disease and there is no conjunction of incompatible forms of life such as civilized man, unwittingly, has brought about on the surface of the globe.

It seems indeed a legitimate view that every disease to which animals, and probably plants too, are liable, except as a transient and rare occurrence, is due in some way or other to man's interference.

The diseases of cattle, sheep and horses are not known except in domesticated herds, and those wild creatures contaminated by man's domesticated productions.

Civilization and disease have ever marched together, but on opposite sides of the street, down through the ages. Disease has never travelled faster than man. Its spread on earth varies as the speed of the locomotive. It spreads through the air only as the insect, the bird, or the birdman carries it.

Nature by her various infections puts into operation the law of natural selection—provides, in other words, a means for thinning out the weaklings and at a time when the thinning is good, in infancy and early childhood.

The maleficent forces of nature always behave in this way.

The aphis in the rose trees carefully seeks out the tiny buds and newborn leaflets. It never touches the sere and yellow leaf.

Man's interference has enhanced the beauty of the tree, will it increase the efficiency of the race?

By his hygienic and other methods man has prevented, to a considerable extent, the spread of infections among both plants and animals, and by his treatment of these and other diseases he has staved off the day of dissolution and to this extent may be held responsible for the strained relations between nature and man to-day.

2. Is man's destiny the control of nature? Man must either follow nature more or less closely, or make nature in a larger measure follow him, or the struggle between the two must go on.

Let us then first enquire how far man may safely take nature as his examplar.

A few weeks ago, an epidemic of influenza swept over the city like a hurricane leaving suffering and death on every street. So far as human eye could see, or mind conceive, nature did not select the weaklings in this case—the weak fared no worse than the strong, the meanest no worse than the noblest and best. Had man or a company of men done this how we would have cried out for vengeance. Can man take nature as his example there?

Or again, go with me to the hospital and I will show you human beings that nature has tortured beyond human description for months and years. Can he follow nature there?

Or still again, a Manitoba frost in a night destroys the labours and hopes of a season. A high authority tells us that taking away the means by which we live is second only to murder itself. Can he follow nature there?

All I fancy will answer "no". Then man must either mark time or he must advance, and along the only avenue left open for him, he must control nature—not in a day, nor a year, nor a hundred years, but sometime.

There is nothing fanciful about such a prediction. Man is the most dominant animal that has ever appeared on this earth. He has spread more widely than any other highly organized form and all others have yielded before him. The fact that he possesses the power to control nature to the extent which he now enjoys is in itself, a call to go forward.

There can be no real safety for man on this earth so long as the maleficent forces of nature go unabashed and uncontrolled.

In twelve weeks it is estimated influenza killed 6,000,000 people. The war killed about the same number in 222 weeks. In Ontario alone the death toll from influenza in October, November, and December was 7,158, and 72 per cent. of the victims were between the ages of twenty and forty. What of the wounded? Unless the by-products of this epidemic are entirely different from those of the epidemic of 1889–1890, the crippled and wounded from influenza will equal in number those from the war, and, so far as I know, nature does not provide a pension.

During the year 1915, nine men of the British fighting forces on land and sea were killed every hour, and during the same period twelve helpless infants under one year of age died under the law of natural selection every hour in Great Britain and Ireland alone.

But, one asks, how is man to advance? There can be but one answer: He must begin with himself. This introduces a eugenic problem.

Before considering how the eugenist proposes to amend man and nature it may be well for us to examine for a moment nature's method of maintaining and increasing efficiency in the human race. A study of it does not necessarily imply approval or condemnation.

It is now sixty years since the "Origin of the Species" appeared. With that period behind us it should be possible to determine with fair accuracy the measure of the selective death rate in man. Death is not the random archer of the mediæval mind. In from 50 to 75 per cent. of the cases the bolt is not random at all, but is carefully directed against our constitutional defects, our inherited predispositions, the weak points in our defence.

To the individual and his immediate friends death and the crippling of activity by sickness and disease appear as the harshest contrast of natural law and human hope and sympathy.

So great is the personal feeling in the matter that in sixty years we have scarcely risen to the conception that death in its chief form—the selective death-rate—is the principal factor in maintaining and elevating racial fitness, that the great function of eliminating the weaklings is maintained in the garden of human life by the hand of death. Individually we shall never, perhaps, be able to realize in this wastage of life the hand of a beneficent gardener.

But for those who would endeavour to study human life from the outside and judge what tends to improve or impair its efficiency as a whole, the selective death rate must remain a great and racially beneficent factor. "On the martyrdom of man is built the triumph of mankind."

Let us now turn to the plaint and programme of the eugenist. Most countries now have their eugenic societies but with one exception, England, they are all simply scratching the surface. The Galton Eugenic Laboratory, the pioneer, is doing real work. From the eugenist's point of view our whole system of higher education needs remodelling.

The system in this country, and in the world so far as I know, is carefully organized to exclude the study of living man. Dead literatures, dead theologies, dead philosophies, dead sociologies, all good enough in their place, and all necessary, may be studied in any of our universities. Living sciences may be closely followed so long as they deal with inanimate nature, or with lower types than man. But of a real living sociology which starts from a study of the biology of social animals, which knows what heredity means

in human affairs, which cautiously measures each factor of environment and the social value of each type of human life, which seeks as its religion and as its politics to further evolution in man, of such a living sociology what evidence have we to-day? May we not ask, is there no science of those vital forces which may improve or impair, physically or mentally, the racial qualities of future generations? And if there be such a science, is it not the duty of the universities to discover and propound its laws? Until very recently, there has never been a careful scientific study of any social problem, that is from the biologist's point of view.

Take the tuberculosis problem. After thirty years of active siege, the ubiquitous tubercle bacillus still holds his fortress, and has to his credit annually about the same number of victims. Our modern methods of combatting tuberculosis are of value, but only as stepping stones to higher things, for in all these years of crusades not a single buttress of the outer forts has been seriously affected.

Just now we hear much of the establishment of a sanatorium in every county. Let us go slowly. I refuse to accept the view that by abolishing all one or two-roomed tenements, by pulling down all back-to-back houses, or by establishing a school clinic, a tubercular dispensary or a sanatorium in every county, you are going to eliminate tuberculosis. The problem is far more complex than that, notwithstanding the statements of would-be social reformers who are continually attacking problems with insufficient knowledge of cause and effect.

To my mind environment and treatment are over-emphasized, parentage and prevention, too lightly regarded.

Or let us take the liquor problem. How it has been bungled! We have heard for years that alcohol is the chief cause of feeble-mindedness, etc. Prof. Karl Pearson and his colleagues in the Department of Applied Statistics, University College, London, have studied the life history of several thousand alcoholics through two or three generations, and they have shown that the worst type of alcoholism flows from mental defect, and that it is the heredity of mental defect which leads to the presence of imbecile and mentally defective children in the family of the extreme alcoholic. If you cut off the alcohol you will not lessen the mental defectives, but if you segregate the mentally defective from childhood onward, you will eliminate 75 per cent. of your habitual drunkards.

Drunkenness is the besetting sin of feeble-minded men, just as immorality is the ruling passion of feeble-minded women.

It is becoming abundantly evident to any one with his eyes moderately open that any discussion of social or political problems, to be adequate, must give due weight to the biological factors controlling human communities.

Take for example, the position of women in the labour market to-day. If women continue their invasion of man's field of labour what will be the effect on the birth rate of legitimates in this country? Domestic help formerly attainable is now almost impossible to secure. Already in one province at least of this Dominion, the legitimate birth rate is falling on this account. There is much speculation at the present time, and there has been endless talk on this subject by all sorts and conditions of men and women, all of whom forget that verbal disquisition never settled any real problem. In all their discussions the great fundamentals—observation, measurement, and experiment are conspicuous by their absence. The moment, however, you mention experiment the antivivisectionist is on your heels. In every country it is the half trained, not the densely ignorant, that give most trouble.

In the final and durable solution of these problems the biological bearing must find a place.

On plants and the lower animals it has not been considered beneath the dignity of man to breed for higher excellence, and with advantage to the human race. Why should the investigations stop at man? We are met with the answer that most, if not all, of the advances have resulted from repeated experiments on plants and animals. The inference is that we cannot experiment on man, and that, therefore, our investigations must cease. But it is not necessary to experiment on man. Man, for thousands of years, has been experimenting on himself, and making experiments too, that are directly impossible for the eugenists. This stock marries kin for six generations; those parents surfeit themselves with alcohol; there the tuberculous taint meets insanity; here a man of genius marries into this class; there he takes a woman from a lower stratum, and a hundred other examples might be given.

Man must observe and study these experiments in the fullest light that can be made to play upon them.

What are the results thus far? The average eugenist sees, or thinks he sees, in the selective birth-rate a panacea for many of our ills. The biometricians have demonstrated that with every advance of civilization, the birth-rate has become more and more artificial. The same is true of the death-rate. Both these forces are operating at present, and no one can define ac-

curately the part played by either in the evolution of human society. Must they go on together, in part natural, in part artificial, or will science one day gain control?

There is much in the idea of a selective birth-rate that appeals to us. It carries with it a more Christian attitude to the weakling, to the unfit.

Nature allows the unfit to be born with all the suffering that birth entails, and then ruthlessly slays large numbers of them in the early years of life, not for any crimes they have committed, but for the sins of their ancestry.

The selective birth-rate seems to offer a reasonable substitute. Will the science of the future more and more direct its attention to parentage? Will it prevent to a considerable extent the birth of the weakling by segregating the men and women physically and mentally unfit to be parents?

And finally, will it eliminate the bacterial menace of to-day by multiplying a hundred-fold the number of men and laboratories necessary to cope with the situation?

Time alone can tell. History and human experience seem to answer in the affirmative.

What then is man's place in nature?

Man is a trustee of God, a shareholder in the world of nature, a partner in the moulding of the physical and spiritual destinies of the race, and his goal, though high and distant, must ever be . . . the control of the forces of nature.

I am indebted to the Registrar General of the Province of Ontario, Dr. J. W. S. McCullough, for statistics, and to the lectures of Prof. Karl Pearson, University College, London, for statistics and many valued suggestions.

The Governors of the Kingston General Hospital are having plans prepared for an extension of the Public Ward department, the estimated cost of which is three quarters of a million.

THE RETURN OF THE ARMY MEDICAL OFFICER

By Colonel E. J. Williams, D.S.O., C.A.M.C.

THE army life in the case of the majority of medical officers is drawing to a close and their minds are again being directed towards civil practice. The life they are leaving has been a more or less regular one. With a definite rank and regular duties, laid down by the commanding officer of the unit, and a fixed rate of pay, which is sure to be forthcoming every month, they have been spared many of the worries incidental to medical practice. There have been times when the work has come by rushes lasting days and sometimes weeks; but this has obtained more particularly in the case of the Field Ambulances and Casualty Clearing Stations. If this work has been done with a fair amount of efficiency he has been assured of recognition and has practically never been subject to the unjust criticism which he must so often encounter in private life.

The physician's patients have been devoted to him when he gave up his practice for army service, but this devotion cannot be expected to continue after such a prolonged absence. His confrère who remained at home has "gathered them in" and no doubt will retain the greater number of such people, as the patients will wish to continue with his services. Many plans and suggestions have been advanced for the restoration of the clientele to the returning medical officer, but as this concerns the patients as well as the doctor, the feasibility of them all is doubtful in the extreme.

The life in the army though has not been an entire loss to the officer concerned. His travel, experience, and sacrifice has broadened his vision in a way that will be of great value to him although it cannot be measured in dollars and cents. His training in army work will benefit him directly in several ways. The necessity of recording the many details in connection with each case, both from the medical and military view point, has given him an insight into the value of keeping accurate records. This

training will assist him materially in connection with the business side of the profession and will ensure greater satisfaction to the patients as well as to himself.

His experiences in the military hospitals have taught him the great benefits to be derived from the co-operation of the different services in the unit. This is possible owing to the commanding officer being supreme and the workers all full time men pledged to obey his orders. This allows for a development of efficiency in a hospital never seen in civil life, where a medical superintendent always occupies a minor position.

A host of medical officers have been carefully trained in *x*-ray work and sanitation so that the benefits of their knowledge might be spread over the country to places where at present they are unknown. The health officers should be of great assistance in the years to come if public health is given the attention that now seems probable.

The esprit-de-corps developed amongst the men in the medical corps should be of great benefit to the profession on the absorption of the officers into civil life. They have been so long free from the petty jealousies, that have always marred our esteem in the public eye, that the foolishness of them all is only too apparent to them. Let us hope that they will use their influence to rejuvenate all our medical societies.

The County, District, Provincial, and Dominion Associations all have functions of equal importance. Until the County Association reaches that point of efficiency which is required of every successful organization, the larger associations will be so much the weaker. The questions which concern the profession in the smaller towns and cities should be considered by the County Associations, and then in turn brought before the larger associations. The futility of submitting local questions to the larger associations has been amply demonstrated as futile.

A strong "revival" in the Medical Associations throughout the whole Dominion is urgently needed, and none are more fitted to assist in bringing about this much hoped for condition than the returned medical officer.

PROSTATIC MASSAGE

By W. T. Lockhart, M.D., *Major C.A.M.C.*

Canadian Hospital, Etchinghill

AMONG the conditions found in chronic or relapsing gonorrhœa, infection of the prostate easily takes first place in point of frequency, and it seems probable that there is some involvement of the prostate in every case in which the posterior urethra is infected.

A large proportion of these cases resolve or become symptomatically cured without any treatment other than the routine lavage, but a certain number carry on and become chronic, while in many supposedly cured cases the infection lingers in the prostatic acini, the tissues of which have become tolerant to the gonococcus and such cases may at any time light up and reproduce a florid gonorrhœa, or may convey the disease by copulation. It is therefore important to examine the prostate of every patient in whom the posterior urethra has been involved, and if it is found to be diseased, to adopt appropriate treatment before discharging the patient.

Should the prostate become acutely inflamed during the course of the disease, rest in bed, hot sitz baths, or rectal irrigation, morphine suppositories to control pain, and the cessation of all intra-urethral treatment are required until the acute symptoms subside, after which lavage can be resumed, supplemented later on by massage of the prostate. Sometimes abscesses are formed of varying size, which usually rupture into the urethra, but occasionally may fail to do so, and it becomes necessary to open them through a perineal incision. The latter contingency is fortunately rare, for in the last one thousand cases discharged from Etchinghill, only one such has occurred.

More frequently a subacute or chronic inflammation results, as shown by shreddy second urine, or by examination per rectum, after all acute symptoms have subsided.

Delimitation of the disease is done in the ordinary manner; the patient should attend with three or four hours' urine in his

bladder. The anterior urethra is first washed out with clear boracic acid solution and examined for shreds. The patient then passes his urine into two glasses. If the second glass is clear, a small amount of the boracic solution is injected into the bladder, and the prostate massaged. The solution in the bladder is then voided into a third glass carrying with it the debris expressed from the prostate. During the massage the operator's finger notes the size, shape, and consistency of the gland, together with any other features, such as localized or general tenderness, presence of nodules or cysts in the substance of the gland, or of inflammatory exudation in the tissues surrounding it.

Should the second urine not be clear, the bladder is alternately filled and emptied of boracic solution until the fluid returns clear, after which a few ounces are left in the bladder and the prostate massaged. The solution is then voided into a glass and examined for prostatic exudate.

Prostatic massage is best accomplished by means of the index finger, enclosed in rubber glove or finger-stall, within the rectum. The patient assumes the knee-elbow position on the examining table, with the thighs at a very slight forward angle to the body, or if more convenient he may stand bent over the back of a chair, with his hands resting on the seat.

In the former posture the operator can gain advantage in reaching the upper portion of the gland by pressing upward with his disengaged hand on the suprapubic portion of the patient's abdomen after the manner of a bimanual examination. The motion of the massaging finger should be from the outer edge of the lobe to the urethra, and after thus massaging each lobe separately, the finger should be drawn from above downward, a number of times, over the posterior urethra, so as to express secretions from the sinus poculares and the terminations of the ejaculatory ducts. At first, pressure should be quite light. As tolerance is established, it may be increased, but should not at any time give rise to actual pain. The duration of a massage should not exceed two to three minutes.

The effect of massage consists in emptying the pus pockets into the urethra, relieving the engorged blood-vessels and lymphatics of the stroma, and stimulating the reparative processes by inducing a more liberal supply of fresh blood and lymph to the entire organ. Moreover, the removal of the plugs of pus and mucus, which occluded the ducts and pockets opening into the urethra, allows the succeeding instillation to penetrate more deeply

and to reach many of the infecting organisms, which would otherwise be shielded from its action.

I am strongly of the opinion that after the expressed contents of the gland have been voided by the patient, it should never be omitted to either fill the bladder with solution of potassium permanganate one to eight thousand, which is immediately voided by the patient, or with a suitable syringe and catheter to instil a fairly strong solution of protargol (2–4%) or other organic silver preparation into the posterior urethra. This solution should be retained until the next act of urination.

An objection to prostatic massage is that it is sometimes followed by an acute epididymitis. If massage is practised at the proper stage of the disease and instillation carried out immediately afterwards, such cases will be very few. A further precaution consists in administering atropine, either by suppository (gr. 1/75) or hypodermically (gr. 1/100) for one or two doses, prior to giving the massage.

Prostatic massage should not be commenced during the acute stage of the disease. If there is purulent discharge, if the urine is turbid or hazy with pus, or if the gland is painful or tender to pressure, massage will do more harm than good and will probably induce further complications. Other contraindications such as proctitis, or inflamed hæmorrhoids, are very rare. If the hæmorrhoids are quiescent, the condition would be no bar to massage if otherwise indicated.

Prostatic massage is usually repeated twice weekly, but inert cases sometimes do better with more frequent treatment, care being taken not to unduly irritate the rectum.

The careful use of a posterior dilating sound in conjunction with massage is helpful in the more obstinate and chronic cases.

INFLUENZA AND VACCINATION

By J. J. Heagerty, M.D., D.P.H.

Bacteriologist and Assistant Medical Officer, Grosse Isle Quarantine Station

THE strongest weapon in the hands of the health officer in the fight which he constantly wages against infectious disease is vaccination. By means of vaccination he has stamped out smallpox; that "most appalling scourge" which, time and again, has swept over the world carrying off millions of human beings and leaving thousands of others scarred, battered and loathsome to look upon.

Little does the present generation know of smallpox and its ravages, and less do they know of the tremendous odds against which the health officer of other days had to fight in his effort to stamp out this disease. Occasional rumblings are heard from the ranks of the anti-vaccinationists of the present day, but they are nothing to the storms of ignorance and prejudice with which our predecessors had to contend. To-day, when it is proposed to vaccinate entire armies, not a breath of opposition is felt. The health officer of other days has justified himself and his successors to the world. He has shown us that the best way to combat disease is by prevention and that the weapon of choice is vaccination. To him we owe a never failing debt of gratitude.

How true it is that we learn only by experience! Although we have had constantly before us the result obtained in combatting smallpox by means of vaccination, yet we had no thought of applying the same principle to other diseases until we had been scourged by them. Had not typhoid fever played such havoc with the troops during the South African war, we should not have been able to-day to apply typhoid vaccination to the army, and one can only guess what the result would have been without it. Similarly, had not dysentery and other intestinal diseases flayed us, time and again, in our eastern campaigns, we could not have applied vaccination against dysentery and cholera to our eastern armies, and without it would we have gained the brilliant victories

that we did? In every case where vaccination has been brought into use it has proved its worth. Shall we profit by this experience once more? Will the devastation wrought in our midst by influenza be sufficient to urge us to take up the weapon of vaccination and make it ready for use against a future invasion of this disease, or will we sit supinely by and await our fate?

Leaders of preventive medicine tell us that the only way we can hope to prevent a recurrence of influenza is by means of vaccination. All other methods, they contend, are puny by comparison. The latter has, I am sure, been proven to the entire satisfaction of the great majority of health officers during the past epidemic. Every weapon upon which the health officer has been accustomed to rely in his struggle against infectious disease failed him miserably when influenza made its appearance upon the scene. Isolation of the sick, segregation and quarantine of contacts, masks, disinfection, gargles and sprays, one and all proved either "totally ineffective" or only "moderately efficacious". This is to be expected where we are dealing with a disease that is communicated through the mucous membranes. Our experience with pneumonic plague has been identical in every respect. Pneumonic plague is the most deadly disease on record for physicians, nurses, and attendants on the sick, and its mode of entry into the system is identical with that of influenza. Vaccination, and the wearing of masks in the presence of the sick, followed by gargles, are the usual methods employed to prevent infection by this disease, and it has been proven beyond a doubt that the most reliable of these is vaccination, and the same applies to influenza.

Rosenau, who is an authority on preventive medicine, puts his whole reliance on vaccination, and claims splendid results for the vaccine which he has used as a preventive during the recent epidemic. If it is true that a vaccine in his hands has given such good results, then the health officer will indeed rejoice, for he will not look for the next appearance of influenza with fear and trembling, but with the utmost confidence in the knowledge that he possesses a weapon that will stamp out this disease.

Unfortunately for the health officer and the practitioner, there were a number of vaccines on the market during the recent epidemic. All of them had their advocates; all of them their detractors. Some of these vaccines claimed preventive properties, only; others claimed curative properties as well. Between them all the practitioner was lost in a sea of confusion, was doubtful of all of them, used them, if at all, with trepidation, and then only as a last resort

in hopeless cases, never as a preventive. The health officer was equally confused, did not feel that he was justified in instituting measures for general vaccination, and meanwhile the disease spread.

The question of a "vaccine" for influenza is an extremely important one. If we hope to cope with a future invasion of this disease it will be by means of a vaccine and not by the methods used during the recent epidemic

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THE inhalation of sulphur fumes are of great benefit in the treatment of pulmonary tuberculosis. This statement was made by Dr. F. Tweddell in a paper read before the society of the Alumni of Bellevue Hospital. He had already found sulphur fumes effective in the treatment of various infections, and recently it developed that even tuberculosis responded to the properties of the acrid gas. It is known that certain occupations are comparatively free from tuberculosis; medical literature has long numbered coal miners in this class. Coal dust prevents the development of phthisis, and miners are less subject to phthisis than all other occupied males. This immunity is not as great to-day as it was. Why should coal dust prevent consumption? It can act in but one way on the lungs, as an irritant—like any other foreign body that it is not absorbed by the tissues. It is also found that employment in coal yards does not entail any freedom from tuberculosis; the coal dust is the same whether in yard or mine. Presented with this inconsistency Dr. Tweddell proceeded to investigate. He went to chemists and engineers and stated that he was certain that sulphur fumes must be present in mines. The experts unanimously replied that coal dust did not decompose, and to the suggestion of the physician that sulphur fumes might penetrate through the fissures in the coal, they replied that there were no fissures in anthracite. Finally one of the engineers tested the air of a mine and found sulphur dioxide present. The mystery was solved; it was due to the burning of the sulphur contained in the blasting powder. This explained the immunity of miners from tuberculosis. Very powerful air fans are now used in mines. This brings about a smaller proportion of sulphur fumes, hence the lessened immunity of modern miners from tuberculosis.

TUBERCULOSIS AS A CAUSATIVE FACTOR IN DISORDERED ACTION OF THE HEART

(With Observation upon the Subcutaneous Tuberculin Reaction in Three Hundred Unselected Cases of Disordered Action of the Heart

By Captain Horace R. MacIntyre, C.A.M.C.

No. XI Canadian General Hospital

IN the winter of 1917–1918 it was noticed in the chest wards at No. XI Canadian General Hospital that not a few of the medical history sheets showed the patients as having been in Bushey Park, or some other hospital, with disordered action of the heart.

In a number of these cases we were able to demonstrate early apical tuberculosis clinically, and were able as well to get confirmatory evidence by the use of the radiograph and the subcutaneous tuberculin reaction.

About the same time we were seeing another type of case, mostly in the youth of 19–21. This type presented more or less cough, loss of weight, general weakness, pallor, evening rise of temperature, and a rapid irritable heart; a clinical picture of early tuberculosis with no sputum or chest manifestations. General weakness and shortness of breath on exertion were the chief complaints in practically every case.

On sending these cases for *x*-ray examination, the reports invariably called attention to mediastinal glandular enlargement. In a percentage of these cases the subcutaneous tuberculin reaction was sharply positive, and they were diagnosed "tuberculous mediastinitis", and dealt wth accordingly.

These two types of case decided us to subject a small series of unselected disordered action of the heart cases to both the subcutaneous tuberculin test and radiograph examination, with a view to determining whether or not we could demonstrate any relation between disordered action of the heart (or as the workers on this

subject prefer to term it "effort syndrome"), mediastinal glandular enlargement, and a positive tuberculin reaction.

This procedure was carried out in a small series of twenty unselected cases which Major Whittemore, M.C., collected from the different wards of the hospital. Of the twenty cases, three showed a sharp positive reaction to the subcutaneous tuberculin test, but in one of the three we were able to demonstrate an early apical lesion which had been overlooked, and for which he was invalided to Canada. Both of the other positive cases were reported by Major Pirie to show mediastinal glandular enlargement.

From the results of this small series above we decided that further work upon the same lines would be justified, and felt assured that a larger series would yield us information upon which we could place a reasonable measure of significance.

It is regretted that at this time the number of disordered action of the heart cases in the hospital was below our usual figure, and it was impossible to carry on a large series here, where we would have had the benefit of Major Pirie's work on the glandular enlargement, which by this time he had defined and classified into four stages according to the amount of involvement. It was then left to us to do what we could with the subcutaneous tuberculin reaction, and we have to thank Dr. Thomas Lewis, F.R.S., Colchester Heart Hospital, and Major Murray, Bushey Park Hospital, for making it possible for us to carry out the tuberculin test in 300 cases (200 at Colchester, 100 at Bushey Park), the findings of which are recorded below.

Colchester Series

Our cases were unselected, and were merely cases picked at random from the cases of disordered action of the heart under the care of seven different medical officers; cases of organic disease were avoided.

After temperature records for three days, to avoid injecting patients who showed an evening temperature of over 99° F., we injected into the subcutaneous tissue of the inner aspect of the upper left arm 1 c.c. of 1–1,000 dilution of old tuberculin (equal to 1 mg. O.T.).

Our results as summarized from the data recorded are as follows:

Positive reactions	Negative reactions	Local reactions only
23 (11·5 per cent.)	177 (88·5 per cent.)	70 (35 per cent.)

Our reaction consisted of four components: a local, focal, symptomatic or general, and a temperature or febrile reaction (see form appended).

Owing to the nervous instability of this class of patient, we aimed at taking a very conservative view of what constituted a reaction.

1. In dealing with our local reaction, we recorded as such only those that showed definite redness, tenderness, and swelling over an area equal to that of a circle $1\frac{1}{2}$ to 2 inches in diameter on the average.

It might be noted that early in our series we considered that the percentage of local reactions we were recording was higher than we had observed in the chest cases upon which we had carried out this test. Dermographia, which can be elicited in these cases much more easily than in cases in a chest clinic, suggested itself as a possible cause of the redness, etc., at the site of injection. At the suggestion of Captain Bridgeman (M.O.R.A.), we gave an "injectio-vacua" in the corresponding site of the left arm. In every case of the fifty in which we carried out this procedure there was nothing to be seen but the needle puncture, and so we were able to rule out dermographia as a possible cause of the rise in percentage of what we were calling a local reaction. Our percentage of local reactions, with no other manifestations of reaction, however, at the completion of our series, was higher in these cases than in a mixed ward of chest cases in No. XI Canadian General Hospital.

2. The focal reaction gave us some interesting new information in this series. In ascertaining data suggestive of a focal reaction, we were more or less at a loss. Whereas in a chest clinic we are able to depend upon increased sputum moisture and intensification of respiratory changes, here we were obliged to look for changes referable to the heart action. Præcordial pain and vertigo were the most noticeable new complaints. In some cases where these complaints has been elicited before injection, they were complained of as being much more severe following injection. A few cases of palpitation where this had not existed previous to injection were noted.

A noticeable slowing of the "pulse at rest" was the most interesting new phenomenon noticed in this series. Many instances of the "pulse at rest" falling below any previously recorded pulse were observed.

This not having come to our notice so forcibly in chest cases,

we were endeavouring to attach some significance to it as being peculiar to mediastinal cases, but we find that R. W. Allen (late Editor of *Journal of Vaccine Therapy*) considers it part of the reaction in itself, and attaches importance to it only in so far as it is indicative of sufficient, but not excessive, dosage. "Rise in pulse rate of 15–20 beats followed within twenty-four hours by a fall to a level lower than previously existent." (*Vide* also Bushey Park series below.)

3. The General Reaction gave us very little new information. Restlessness, sleeplessness, and headache were the most common complaints. Nausea and vomiting in a few cases were present.

Drowsiness in the morning following injection was noticeable in a large percentage of the cases that reacted. This was more noticeable than had hitherto been our experience, yet we were unable to suggest why it should be noticed more in this type of case. It appeared, however, that there was some relation between the drowsiness and the low pulse rate. (*Vide* Bushey Park series.)

4. On the whole we looked for a rise of 1° F. before declaring a febrile reaction, but in summarizing, in the presence of a marked focal reaction in one or two cases, we were able to declare a "positive reaction" with a rise of less than 1° F. (*Vide* Bushey Park series.)

During the interval between the Colchester and the Bushey Park series we endeavoured to improve our methods and interpretation of what constituted a focal reaction, which, in our opinion, is the most reliable (if not the only reliable) component of the reaction.

In consulting Bandelier and Roepke's "Tuberculin in Diagnosis and Treatment", we found that they considered spinalgia and tenderness, associated with a feeling of tension in the chest, caused by increased intrathoracic pressure from the swelling of the thoracic lymph glands, a focal reaction. We paid particular attention to the observation of this in the Bushey Park series, and were able to gain some valuable information which assisted us in determining the presence of a focal reaction.

Bushey Park Series

Our cases in this series were unselected as in the previous one; in this also cases of organic disease were avoided. The same technique and dosages were used.

Our results, as summarized in this series, are as follows:—

Positive reactions	Negative reactions	Local reactions only (*Not included in positives*)
9 (9 per cent.)	91 (91 per cent.)	27 (27 per cent.)

1. We have to note a lower percentage of local reactions in this series as compared to that at Colchester. In disordered action of the heart cases, on the whole, the local reaction appears to present itself later than in cases seen in a chest ward. In cases in a chest ward the local reaction usually reaches its height within the first twenty-four hours, except in the more latent cases. In the positive cases, it was noticed in this series that an arm that presented very little change in the first twenty-four hours in many cases presented a much more angry appearance after the first twenty-four hours. We are unable to explain this observation, except that in the cases which show this delayed reaction here—well over 50 per cent.—the focus is not highly active.

2. As intimated above, we paid more attention to the focal reaction in this series than in the former one. Of the nine cases that gave a definite positive reaction in this series, seven presented a focal reaction with signs and symptoms referable to the heart, and two a focal reaction with signs and symptoms referable to the chest.

Of the seven with signs referable to the heart, seven presented tenderness over the dorsal spines (one over second and third, six over third and fourth). Two complained of præcordial pain, and five of vertigo where it had not existed previously. Five showed a "pulse at rest" lower than ever existed previous to injection.

Of the cases with signs referable to the chest, one complained of pain in the right clavicular region, smothering sensation, and an increase in cough and sputum. The chest showed right apical inpairment posteriorly, harsh inspiration with prolonged and intensified expiratory murmur, and some more or less constant moisture in this region. The second complained of excessive cough following injection, and post-tussic moisture was elicited in the right apex. In both these cases the "pulse at rest" on the morning following injection was lower than had ever previously been shown.

3. The findings in the symptomatic, or general reaction, in this series correspond to those of the previous. Of the nine positive reactions here, five, without leading questions, complained of drowsiness (being "dopey") in the morning following injection.

These five cases were those, as stated above, that showed the lower "pulse at rest"; thus our suspicions in the first series are strengthened here, viz.: that a relation exists between the drowsiness and low pulse at rest in the morning following injection.

4. In determining the temperature or febrile reaction, we looked for the same rise of 1° F. as in the former series. Benefiting by our more thorough understanding of what constituted a focal reaction, however, we were not so dependent upon the febrile reaction.

At this point we might note that in our experience no temperature reaction (other than a pseudo-reaction) occurs without a focal reaction preceding or accompanying it, whereas considerable evidence of a focal reaction might be present without sufficient toxin being liberated at the infective focus to produce a general reaction.

A summary of the two series gives us in the three hundred cases:—

Positive reactions	Negative reactions	Local reactions only (*Not included in positives*)
32 (10·6+per cent.)	268 (89·3+per cent.)	97 (32·3+per cent.)

Our observations end here, and if we attempt to place an interpretation upon our findings, three questions immediately arise:

1. What is the percentage efficiency of our reaction?

2. Given a positive reaction, what is its interpretation or clinical equivalent?

3. What interpretation can be placed upon a local reaction only?

To deal exhaustively with these three would involve extensive reference to the published work upon the tuberculin test; our interpretations are given from what we accept after only a few years of work with the reaction, and from the study of the methods and interpretations of the outstanding authorities upon the subject.

In dealing with (1) we have to note that we are using only one dose, and that a relatively small one (1 mg); therefore, granted that our technique is good, all we can claim is that our findings err possibly on the low side throughout.

In answering (2) we place ourselves in accordance with that school which, with this dosage, would take a sharp reaction as indicative of "an active tuberculous lesion".

We would feel justified in answering question (3) by placing

upon our local reaction an interpretation equal to that of a positive von Pirquet reaction, *i.e.*, previous infection (healed lesion).

Assuming an acceptance of our interpretation in (2) and (3) above, we find:—

1. That in a percentage of unselected cases of disordered action of the heart (10·6 per cent. this series) active tuberculosis exists.

2. Apart from the cases showing active tuberculosis, a still large percentage (32·3 per cent. this series) show evidence of a previous and latent tuberculous infection.

Having detailed our observations in this series of three hundred cases, and having ventured to suggest what interpretations, in our small experience, we would feel justified in placing upon our findings, it would appear much the safest procedure with the small amount of more or less hurried work put upon the subject to enter into no discussion as to whether or not the infection which we have proved to exist, or to have existed, is the causative factor in this percentage of disordered action of the heart cases.

I am greatly indebted to Dr. Lewis and Major Murray for making these series possible. I am also indebted to Major Whittemore and Major Pirie for their co-operation, and to Captain Kenneth McKenzie (Colchester Heart Hospital) especially for his untiring work with me in the Colchester series.

I assume the first person, and mention these men at this point, not only to express my indebtedness to them, but to free them from any responsibility of any suggestions I might make in completing my discussion, since I fear that from dreaming of tuberculous mediastinitis day and night I might make some remarks to which they would take objection.

To attempt to attribute the condition we know as disordered action of the heart in 32 per cent. of the cases to a healed lesion which might be ever so minute, would be a task full of difficulties. I can refer to any number of investigators with much greater experience who find a local reaction in a much greater percentage of apparently healthy individuals than we have demonstrated in this series. An extensive comparative series would have to be worked out with a battalion of A1 soldiers to give any convincing results, so for the present the question of healed tuberculosis will have to be left untouched.

Not alone from the cases in which I have been able to demonstrate clinical tuberculosis, but also from the similarity of the histories of disordered action of the heart cases to those histories which I have of patients in civil life at their first appearance at a chest

clinic, do I consider that the syndrome known now as disordered action of the heart has in the past been more or less recognized as the forerunner of tuberculosis, which disordered action of the heart the poor patient fought against until his cough brought him to a chest clinic.

It is not a little interesting to ponder over the old histories of the chest clinic of civil life, and compare them with the histories of disordered action of the heart cases after four years of war. The tales told are the same, but told under entirely different circumstances.

We know the old, old story of—having become weaker during the last year; having become nervous and unable to do the same amount of work: having been "fired" or having sought a lighter, and again, even a still lighter job; having not felt bad enough to go to bed, "but this cough started three months ago and is becoming more and more troublesome." His "effort syndrome" unrecognized has cost our poor labourer, perhaps, his chance in life and the municipal authorities a considerable sum for his sanatorium treatment. Not so with "Tommy Atkins". The morning sick parade, visions of the becapped and smiling face of the nursing sister, and his dollar ten safe in the paymaster's hands, have helped Sir Thomas to realize that his "wind" is not so good as it was, and we have disordered action of the heart (recognized).

Disordered action of the heart recognized, the question is: How many cases in our heart hospitals would show mediastinal glandular enlargement with signs of mottling, and how many would react to the subcutaneous tuberculin reaction?

Two further questions bear asking: (1) How many cases of disordered action of the heart cause unknown, were early central tuberculosis, and were cured by auto-inoculation in the course of their remedial exercises in one or other of our heart hospitals? (2) Would routine tuberculin tests in conjunction with radiography and a well-regulated class, carried out with a view to auto-inoculation of positive cases, increase the efficiency of the service and attach a better prognosis to disordered action of the heart of this type?

Tuberculosis Reactions

Name... ..... *Ward*.....

Injection given 1: 1,000. Date .....

	24 hours	48 hours	Remarks
A. Local.....			
B. Focal.....			
C. Temp.....			
D. *Symptomatic*.....			
(1) *General:—*			
Restlessness.....			
Sleeplessness.....			
Malaise.....			
Nausea.....			
Vomiting.....			
Pains.....			
Headache.....			
Drowsiness.....			
(2) *Referable to heart:—*			
Præcordial pain.....			
Pulse at rest.....			
Dyspnœa.....			
Vertigo.....			
Palpitation.....			
Dorsal spine tenderness.....			

THE USE OF *X*-RAYS IN GASTRO-INTESTINAL DIAGNOSIS

By Hill H. Cheney, M.D.

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IT is not my intent to give a lengthy discourse on anything ultra-scientific concerning the use of *x*-ray in gastro-intestinal diagnosis, but rather to give a simple treatise on the matter and try to answer a few questions which are frequently asked by men who have not had the opportunity of going into the actual work of *x*-ray diagnosis but depend largely upon the telephone report of the radiologist.

One is often asked: Did you see any gastric ulcer? What does an ulcer of the duodenum look like? Or some doctor will send a patient to the *x*-ray department about five o'clock with a note saying: "Dear doctor, will you please take a photograph of this patient's abdomen, as I suspect a carcinoma of the pylorus." I do not mean to imply that we get many such inquiries, but we do get enough to show that a great many men have not had the opportunity to learn about the methods of gastro-intestinal examination by the use of *x*-rays (very little has been written about it) or they do not want to waste the time of the radiologist by having him explain the grounds on which he bases his conclusions.

The purpose of this paper, therefore, is to give a general idea of the method I employ, and point out a few things which I have observed and have not seen reported.

In doing a barium meal examination, I prefer to have the patient report not later than ten o'clock without any breakfast and without any purge the night before. There is no objection to the patient having a cup of tea and a piece of toast about seven o'clock and in most cases it is preferable as it prevents the patient from having a "headache" and does away with the violent "hunger peristalsis" of the stomach.

Gastro-intestinal conditions are diagnosed by summing up the

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findings in the fluoroscope and skiagraphs after the patient has taken the prescribed barium drink which consists of four fluid ounces of barium sulphate mixed with water to the consistency of thick cream, and eight ounces of buttermilk. Sweek milk may be given if the patient objects to buttermilk, and may be flavoured to suit the taste. Flour, sugar, Horlick's malted milk or other substances may be added; but I find that buttermilk or milk fills the requirements adequately. The drink is found advantageous to the solid method of administration, especially in that it fills and outlines the stomach immediately, making the examination more brief, and thereby eliminating in a measure the possibility of giving the patient an over-exposure of the rays. The patient is placed in position between the tube and the screen. A filter of aluminium or leather is placed in front of the tube to absorb as much as possible of the soft, non-penetrating rays which cause the dermatitis, so often produced by prolonged exposures without filters. When the patient is in position, a general fluoroscopic examination is made of the lungs, heart, diaphragm and abdomen in the antero-posterior position to note any peculiarities or visible pathological findings. Then the patient is placed obliquely with the right anterior side nearest the screen so that a good view is procured of the posterior mediastinum. The patient is then asked to take a few swallows of the mixture mentioned above, the course of which is observed in order to ascertain the presence of any irregularity, any obstruction, or anything abnormal in the path of the œsophagus. The most usual irregularity is a deviation of the œsophagus as it passes an aneurism of the aorta. The next is a cardio-spasm which allows usually some barium (we will speak of our mixture hereafter as barium) to pass into the stomach before the obstruction becomes evident. An irritating, early ulcer at the cardio-œsophageal junction may, and very often does, cause this spasmodic contraction of the lower end of the œsophagus. Then more rarely comes a more complete obstruction at this point, caused by an old cicatricial ulcer or neoplasm. After these observations are made, the remainder of the barium is disposed of by the patient while in the antero-posterior position and an exhaustive examination of the stomach is made with the fluoroscope before any plates are taken.

The findings that point to ulcer may be summed up under two headings:

A. Positive signs.

B. Possible signs.

The Positive signs may be tabulated as follows:

A—1. The barium filled cavity: This may take the appearance of a wart-like shadow outside the general outline of the stomach, and is caused by an ulcer crater being filled with barium and silhouetted upon the screen or plate. This is only established by appearing during a long fluoroscopic examination or in a series of plates, and may appear in any part of the stomach or the duodenum.

A—2. Barium passing through perforation: This may be an acute perforation and passing immediately into the peritoneal cavity or only between the muscular coats of the stomach, or it may be an old perforation which has been walled off, forming a pocket or pouch in the adjacent tissues.

A—3 Pyloric obstruction: An old ulcer with a cicatrix contracting causes a partial and sometimes a complete obstruction to the exit of the gastric contents. If complete, or even if a ten-hour retention is present, the observer will notice the barium drop nearly to the pubis, in a large dilated stomach, forming a saucer-like pool with a sharp line of demarcation between it and the lighter fluid above, which has remained in the stomach from the night before. In a few minutes, in a majority of cases, a very violent peristalsis will be established with very little if any effect. This lasts for five or ten minutes and then subsides, forming again the saucer-like pool. Intermittently this continues until the stomach is empty, or in case of complete obstruction, until reverse peristalsis takes place or a stomach tube is used.

A—4. Permanent hour-glass stomach: In the case of a permanent hour-glass stomach the barium fills the upper bulb and remains there for a time, varying from a few seconds to five or ten minutes, owing to the size of the constriction, when peristalsis is established and forces the contents into the lower bulb, leaving the upper empty in from one half to three or four hours. The lower bulb is usually proportionately more tardy in emptying, taking from two to ten hours or more. *This tardiness* was first thought to be due to a pyloric stenosis from a similar cause to that of the hour-glass constriction, but from examining quite a number of cases at operation and studying the operation reports of many more, I have come to the conclusion that very few cases indeed present any pyloric stenosis at all, but that the retention at the pyloric end of the stomach is due to the arrest of peristalsis by the cicatrix at the site of the hour-glass constriction. In these cases a duodenal cap is very seldom formed owing to the small amount of barium forced through at one time being too small to fill the first part of the duodenum.

A—5. Incisura:—Incisura occur at each filling of the duodenum, or if in the stomach, after the stomach has been filled. Incisura, or filling defects, may occur in the duodenum, and if permanent, in a series of plates or examinations show the presence of an old ulcer where the defect is found. In acute or irritable cases, the incisura appears on the opposite side of the duodenum and is caused by a spasmodic contraction of the muscle wall.

In the cases of irritable gastric ulcers, the stomach fills out properly at first and in a few seconds the examiner will notice an incisura appear slowly in the outline, usually of the greater curvature of the stomach. This almost invariably indicates an ulcer opposite in the lesser curvature and is supposed to be caused by the irritation of the food, by means of the ulcer upon the nerves supplying the immediate bands of muscle fibres, or by irritation upon the muscle fibres themselves. In contradistinction to this an incisura on one side of the shadow of the stomach may be caused by neoplasm; but in this case the incisura is permanent and appears with the filling of the stomach. These signs, appearing separately or in combination are nearly pathognomonic of gastric or duodenal ulcer.

In addition to these we have, however, the second group.

B—The Possible Signs. These I will state very briefly as each patient must be studied separately when the signs arise, to differentiate from such conditions as adhesions, gastritis, gastric neurosis, atony, etc.

B—1. The Duodenal Cap. The presence of a good duodenal cap is sufficient evidence of a normal duodenum, but the absence of a cap or any temporary inperfection may be caused by one of many things as adhesions, pressure from gall-bladder or from other causes, neoplasm or of tumours in adjacent tissues, tension caused by weight of food in a ptosed atonic stomach, cicatrix from old ulcer, etc.

B—2. Retention, caused by cicatrix, atony, adhesions, pressure from without caused by abnormalities in adjacent tissues, etc.

B—3. Rapid emptying, caused by hunger peristalsis, gastric neurosis, gastritis, irritation from without the stomach, etc.

The time of emptying for the stomach varies greatly and it is difficult to set any hard and fast rule for it. Six hours seems to be the maximum time for the normal stomach to hold its contents, but four hours is about the average time that should elapse before the stomach is completely empty, and in seven hours from the ingestion of the meal or in three hours from the emptying of the

stomach, the ileum should be empty. Besides definite obstruction in the ileum, the actual cause of which cannot always be decided by the *x*-ray, we are mostly interested in the rapidity with which this part of the intestine empties.

Rapid Emptying. Frequently the barium does not remain in the ileum any appreciable length of time, and this condition usually points to one of two things:—

1. Enteritis. This causes a most rapid emptying of the ileum and in many cases the barium will be seen leaving the stomach, passing through the duodenum and then almost immediately appearing in the cæcum.

2. Sub-Acute Appendicitis. Where the ileo-cæcal node is not fnvolved to the extent of destruction, the barium does not immediately start its passage into the colon but empties very rapidly when once its passage is established. This is supposed to be due to the stimulation of peristalsis in the ileum by the action of the presence of food upon the irritable or inflamed ileo-cæcal node.

Delayed Emptying. This may be caused by cicatrix, neoplasm, or other causes of retention, or in case of a chronic appendicitis where the involvement has gone on to the extent of obliteration or destruction of the ileo-cæcal node by cicatrix from the continued inflammatory process. This same nodal condition may also affect the passage of barium in the colon and in the same way cause stasis or diarrhœa.

In the colon we also have obstruction with its difficulty of differentiation. This, however, is not of great importance as when obstruction is once established, surgical measures are usually imperative. At the end of twenty-four hours the barium should be, a good portion of it at any rate, beyond the splenic flexure. In the majority of cases brought before the radiologist, colonic stasis is very evident and in seventy-five per cent. of these cases it is caused by hepatic or splenic acuity or both. This means that a mechanical kink is produced at the hepatic or splenic flexure and has about the same effect upon the passage of material through the colon as a long, soft rubber hose would have if held loosely hanging over two hooks. Often this condition is aggravated by being complicated with adhesions, more especially at the hepatic flexure, where its proximity to the gall-bladder renders it more susceptible to any inflammatory condition of this region. This condition is by no means rare and produces very uncomfortable if not agonizing symptoms.

HOSPITAL TREATMENT OF SUMMER DIARRHOEA

By Lionel M. Lindsay, M.D.

Montreal

THE treatment of "summer diarrhœa" in an infants' hospital presents certain problems not obtaining in private practice.

In the first place we are confronted by the most severe forms and advanced stages of this scourge, many cases coming to the hospital only when treatment at home has failed and the baby is in a desperate condition if not actually moribund.

Without going deeply into the pathogenesis of this group of cases, which for want of a better name I have called "summer diarrhœa", I might perhaps emphasize certain facts that govern rational treatment.

Normally in the intestinal tract there are two great antagonistic processes, the one breaking down carbohydrates into acid end-products; the other splitting proteins into alkaline end-products. In summer diarrhœa there is an excessive fermentation of the carbohydrates with increased acid production, which in turn irritates the intestinal mucosa and causes an outpouring of mucus and a quickening of peristalsis,—hence the frequent, watery, slimy, acid stools, which are usually green and often blood streaked. At the same time there is a drain of alkaline salts through the intestinal secretions, which disturbs the normal acid-base equilibrium and is largely the cause of the symptom-complex known as acidosis. Furthermore, certain toxins are absorbed from the intestinal tract, or are produced by abnormal metabolism which, acting on the central nervous system, cause either the restless irritability or the dull apathy usually seen in these cases.

From this it will be seen that summer diarrhœa is as a rule caused by saprophytic bacteria which produce a pathological formentation of sugars, and possibly of fats, so that we now designate this type by the name of fermental diarrhœa, or alimentary intoxication, which is to be distinguished from mild cases of acute indigestion, and infective ilio-colitis.

From the Infants' Department Children's Memorial Hospital, Montreal.

The clinical picture of these cases is unfortunately only too familiar to require description. The sunken eyes and depressed fontanel betoken the dehydration that has taken place; restlessness and hyperpnœa the acidosis; stupor and prostration the intoxication.

The treatment of these cases must be prompt and intensive. The first thing the infant needs is water, not only to replenish the tissues but also to dilute the toxins and facilitate their excretion through the kidneys. Water is supplied most readily by an intravenous saline. Fortunately this is a simple procedure in infancy as the large longitudinal sinus is easily reached through the open fontanel. 100 to 150 c.c. fluid may be given this way. Immediately after the intravenous saline we usually give an intraperitoneal saline. From 150 to 250 c.c. of fluid may be run into the abdominal cavity by a needle piercing the linea alba below the umbilicus.

Instead of simple saline injections into the veins we frequently give chemically pure dextrose in 5 per cent. solution. This not only supplies a certain amount of fuel but also tends to combat acidosis. Bicarbonate of soda is, however, a more powerful agent against acidosis, and a 4 per cent. solution combined with dextrose often gives marvelous results. But there are certain technical difficulties in preparing this solution as the bicarbonate cannot be boiled without driving off CO_2 and leaving the irritating carbonate in solution. For this reason we usually prefer to give the soda by mouth, and this is generally the next step in the treatment. Twenty to thirty grains dissolved in four to six ounces may be given every hour or two until the urine becomes alkaline or the carbon-dioxide tension of the alveolar air becomes normal.

Cathartics are rather to be avoided in these severe cases lest they further irritate the intestinal mucosa, but a daily irrigation of the colon with weak soda solution helps to remove mucus and certain products of fermentation.

The feeding now demands our attention.

During the first twelve to twenty-four hours no food should be given, but water must be forced, with or without bicarbonate of soda. The continual drip with a nipple at the end is very efficacious if the baby will take it. Infusion of tea may be useful as it is both stimulating and astringent.

As the whole morbid process is primarily due to excesive fermentation of carbohydrates it goes without saying that sugars should not be given, and above all is whey to be avoided, as the high salt and sugar concentration of whey make it particularly liable to fermentation.

Our fundamental object is to change the existing flora of the intestinal tract and replace the sugar-splitting, acid-producing bacteria by proteolytic organisms and alkaline end-products. In this way peristalsis is checked, water is absorbed and demineralization ceases.

This result is most readily accomplished by the use of protein milk (Finkelstein's Eiweissmilch) which contains a relatively high percentage of protein (casein), low sugar and fat, and a moderate salt concentration. Moreover, it contains active lactic acid bacilli which are inimical to organisms of fermentation.

A quantity of protein milk suitable to the age and weight of the infant is then ordered, and in four to eight days the stools should become large, dry and putty-like. These so-called "soap stools" are what we look for and indicate that we may now add sugar to the formula. Dextri-maltose is the sugar of preference, being the least fermentable of all sugars. Lactose should be absolutely prohibited as it is the most fermentable, while cane sugar is intermediate in this respect. So dextri-maltose is added in small quantities and gradually increased, the stools being carefully watched for any signs of renewed fermentation. Part of the carbohydrate may now be given in the form of starch, either barley or wheat flour to the amount of 1 per cent.

During the corrective period there is always an initial loss of weight, but with the appearance of soap stools and the increase of sugar, a steady rise in weight should occur.

In three or four weeks one can usually change protein milk abruptly to a suitable dilution of whole milk, but the feeding of these infants must be carefully regulated for the next few months, as the least indiscretion in diet or some par-enteral infection may precipitate another acute attack of diarrhœa which will necessitate beginning all over again. Every case is followed up by our social service or referred to a milk station, unless they are under the care of a private physician.

Finally a word on the medicinal treatment. Drugs are of secondary importance and may do more harm than good. Opiates are the most dangerous, but if judiciously used may be beneficial if there is much tenesmus or to check watery stools after all signs of intoxication have passed off. Bismuth may be of value if given in large enough doses. Salol and other so-called intestinal disinfectants are considered worthless, as are hydrochloric acid, pepsin, and such like.

Alcohol may be used chiefly for its tonic effect and caloric value. The best stimulants are caffeine, adrenalin, and strychnine.

HYPERNEPHROMA AND RENAL CANCERS

By C. T. Crowdy

Demonstrator of Pathology, McGill University

IN 1883 Paul Grawitz published an article in the *Archiv fur Klinische Medicin Band* 93—(*Virchow*) under the title *Die Sogenannten Lipome der Niere* in which he isolated a group of growths which formally had been included under various headings lipoma, sarcoma, etc., and traced their origin to so-called adrenal "rests". That such tumours exists and that they arise in this manner he proved beyond a doubt, but on reading over his article one is struck by the limitation which he puts upon this group. It is not to be wondered at that with this impetus a great mass of literature has piled up in which renal tumours which were at all fatty or hæmorrhagic in appearance, were brought forward as examples and by hook or by crook shown to resemble adrenal tissue, until we have come to regard almost any growth of the kidney in adults of a fatty adenomatous character as probably of this type, often without sufficient histological examination to establish their identity beyond dispute.

That in their zealous efforts to classify renal tumours both clinicians and pathologists have overstepped the boundaries set by Grawitz is made probably by recent observations especially of Stœrk and Sisson.

I think at this point it would be well to review very briefly the development of the organs involved in order to establish one or two important facts. The suprarenal capsules originate in lower animals from two anlages, one mesenchymal and the other sympathetic. It is a disputed point as to whether the ganglion cells remain or are replaced. In man (Minot) the cortex and medulla are both formed from mesenchymal cells, the cortex growing at the expense of the medulla. This organ arises at the level of the septum transversum (diaphragm) and anterior to the Wolffian body.

The urogenital system in the first place consists of four fun-

From the Pathological Laboratories of the Royal Victoria Hospital.

damental parts; two tubes (a) pronephric or Wolffian duct (b) Mullerian duct and two ridges (a) genital (b) Wolffian or nephridial.

The Wolffian duct at first lies between the nephrotomes and ectoderm and for generations was looked on as mesodermal in origin. In 1866 Hensen first definitely asserted that it was derived from ectoderm, the backward growth being accomplished by the addition of cells from the ectoderm to its caudal end. (Minot p. 235.) Later it fuses with the entoderm and so opens into the cloaca. Later investigations have again made the ectodermal derivation of the Wolffian duct doubtful.

The Wolffian ridge which contains the Wolffian body is a longitudinal structure of mesenchymal tissue covered by mesothelium from which the pronephros, mesonephros, and metanephros or permanent kidney develop, in that order from before backward, so that, between the anlage of the adrenal and the permanent kidney, two structures intervene in the early stages.

From the posterior end of the Wolffian duct a diverticulum grows forward the advancing end of which forms a bulbus expansion from which the collecting tubules of the kidney develop. They grow into the mesenchymal tissue at the posterior end of the Wolffian ridge, which forms the glomeruli, stroma and vessels and, according to modern conception, the secretory tubules of the kidney. The ends of the tubules at this time come in contact with the vascular loops and a layer of glomeruli are formed. The growth continues and the glomeruli are laid down in layers until the cortex is completed. While this is happening the genital tubercle attached to the mesonephros forms the testicle or ovary and changes its position into the pelvic region, and the mesonephros undergoes resorption so that, in man, it is not until towards the end of the third month that the kidney and adrenal come in contact and by this time the capsule is a definite structure. This I think is an important point because one might be expected to find a large number of hypernephromata in the genital tract as well as in the kidney.

Only a few adrenal "rest" tumours have been reported in the genital tract. But I think on the whole this is more comparable to that of supernumary spleens than to new growths.

Having thus, in a very brief way, described the early development of the kidney let us turn to a study of a series of tumours of the kidney all of which, except one, were diagnosed as hypernephromata, and even in the case of the exception a doubtful diagnosis of hypernephroma was made.

Case 1. T. L., male, age forty-five; complaints: cough, shortness of breath. *History*: Symptoms began ten years ago with shortness of breath and cough; palpitation and expectoration developing later. For last three months profuse expectoration, hæmoptysis and frequency at night. Has lost sixty pounds during ten years. The physical examination revealed signs and symptoms chiefly relating to the lungs. Nothing except the frequency relating to the urinary system.

At autopsy, May 14th, 1917, the left kidney weighed 620 gms., was about three times the normal size and surrounded by a large amount of fat. The capsule stripped easily and the upper pole was involved by a large tumour the surface of which was nodular, whitish yellow with dilated venules. On section the upper two-thirds of the kidney is replaced by the growth which is nodular and lobulated, of a pale yellowish colour and fatty appearance and shows extreme softening at its upper extremity. There were extensive metastases throughout the thoracic and abdominal viscera.

Miscroscopic: On examining sections taken so as to include both kidney and tumour and stained with hæmatoxylin eosin one is struck by the variety of pictures presented. In part, the tumour is seen to be made up of tubules in which low columnar or large cuboidal cells sitting on a definite basement membrane form irregular tubules with a definite lumen of varying size. Between these tubules capillary spaces containing blood are seen. The individual cells show little protoplasm and appear clear as if fatty contents or the protoplasm had been dissolved out.

The size of the cell corresponds very closely to that of the cells of the convoluted tubules seen in other parts of the section and the nuclei, which are round, deeply staining, and of medium size, are almost identical. In other parts, the cells grow in solid columns or masses with little stroma and this arrangement is supposed to resemble the cords of cells seen in the adrenal cortex. The individual cells in these solid columns appear to correspond to those already described.

Examination of frozen sections stained with Soudan III shows that these cells contain a large amount of fat in the form of larger or smaller droplets. Fresh sections also confirm the presence of fat.

Case 2. This specimen was sent to the hospital as a typical hypernephroma but unfortunately no history of the case is recorded. The lower two thirds of the kidney is apparently normal while the

upper pole is replaced by a globular encapsulated mass roughly about the size of a grape fruit. On section the centre of the tumour mass was found to be necrotic and hæmorrhagic and very friable. Towards the periphery the cut surface appears yellowish somewhat resembling the cortex of the adrenal and there are small hæmorrhagic areas.

Microscopic: Sections from this specimen also show a variety of pictures. Towards the periphery, which is best preserved, the greater part of the tumour mass is made up of oval or polyhedral cells with round or oval richly chromatic nuclei. The protoplasm is granular and poorly staining. Besides these cells there are a smaller number of evidently disintegrating cells which are much larger and show only a cell outline with a disintegrating nucleus. There is no definite arrangement into columns but fibrous bands divide the cells into irregular areas. These areas contain a small amount of reticular tissue but are poor in vascular channels. In other sections fairly definite duct-like structures are in evidence. They are lined by a cuboidal epithelium resembling the collecting tubules in the medulla of the kidney. In these areas connective tissue and larger blood vessels are a prominent feature. Towards the centre of the tumour all definite structure is lost and the sections show only a necrotic hæmorrhagic fibrinous mass. Frozen sections stained with Soudan III show much less and a more irregular distribution of fat than found in the first case. It is not so definitely confined to the epithelial cells nor are nearly as great a proportion of these cells involved.

Case 3. P. G., age fifty-four. This is the case referred to as being diagnosed as cancer but with a questionable diagnosis of hypernephroma added. The history which is very complete and interesting I will have to dismiss in a few words. The condition had been progressing for about one year before death, swelling of the lower limbs and scrotum, loss of weight, dyspnœa and pain in the lumbar region being outstanding features. Extending from underneath the liver into the right flank there was an indefinite mass moderately firm and dull on percussion. Catheter specimen from the right ureter showed blood.

At autopsy on December 8th, 1916, the right kidney was found to measure $16 \times 7 \times 7$ c.m. Its surface was irregularly nodular but the capsule over these tumour masses was smooth. On section the kidney substance was largely replaced by large, firm, fairly well circumscribed masses averaging 2·5 cm. in circumference. Towards the pelvis these whitish firm nodules as seen in the cortex

become soft brick red, necrotic and stringy. The renal vein was plugged by a brownish stringy material which extended as a thrombotic mass downwards in the vena cava to below the bifurcation, and upwards through the right side of the heart into the lungs.

Microscopic: The microscopic sections in this case show numerous small tumour nodules as well as the larger macroscopic ones. These nodules have either undergone extensive hæmorrhagic disintegration or show well preserved tumour tissue. In the well preserved parts a much more definite tubular arrangement is seen than in either of the two specimens already described. In places columnar or cuboidal cells are seen sitting on a definite basement membrane and bounding irregular lumina. At times the epithelial cells form small papillary projections. The protoplasm of the cells is finely granular, and stains well, the nuclei are of the usual round deeply staining type. Whole nodules do not consist entirely of these tubular structures but contain many areas in which the same type of cells are seen lying in solid masses. Sections made from the extension of the tumour into the vena cava, liver and lungs all show, to a more or less marked degree, the tubular arrangement of cells.

Frozen sections stained with Soudan III show a moderate amount of fat rather irregularly placed in the form of small droplets in the tumour cells.

Case 4. A kidney of a patient who died of aneurism at Peterborough, Ontario, and at autopsy a tumour was found in the upper pole which was diagnosed as hypernephroma. This is by far the smallest of the series and is a well encapsulated round mass 5 cm. in diameter. The cut surface has a yellowish fatty appearance resembling somewhat adrenal cortex. This case is the one which in this series corresponds most closely, in its gross appearance with the description of Grawitz.

Microscopic: The sections (stained with H and E) show a well formed thick fibrous connective tissue capsule. The tumour mass is made up of larger clear vaculoated polyhedral cells with round deeply staining nuclei. The cells are divided into irregular areas by thin but well formed fibrous connective tissue bands which carry many vascular spaces and smaller vessels. That the cells arrange themselves into columns or sections of columns in a few places might be admitted but on the whole the arrangement is so irregular that it seems far fetched to try and compare it to the columnar structure seen in the cortex of the adrenal.

Section stained with Soudan III show a large amount of fat

which is very evenly distributed throughout the epithelial cells in small droplets of fairly uniform size.

Case 5. C. L., age twenty-four. The patient complained of pain in the right loin for two years with tumour in right upper abdomen becoming larger. Has lost twenty pounds in weight. A rounded mass about the size of an orange, not tender or nodular was palpated in the right upper quadrant. Cystoscopy did not add any data. A trace of albumen was found in the urine.

On May 31st, the kidney was removed at operation and diagnosis of hypernephroma made (S. 60-17). The tumour mass which was about the size of a large orange involved the lower pole and replaced the lower three fourths of the anterior surface of the kidney. On section it encroached extensively on the pelvic space. It was encapsulated and the cut surface was pale yellowish colour, homogeneous throughout showing no evidence of hæmorrhage and of a moderately soft consistence.

Microscopic: The appearance of this tumour differed somewhat from the others in the amount and distribution of its connective tissue. It showed no definite divisions into islands or columns but the cells were supported by a fine reticular tissue. The cells varied greatly in size and were round or oval, sometimes polyhedral. Many appeared as clear spaces while others contains a varying amount of fine granular faintly staining protoplasm. The nuclei also showed a marked irregularity in size and shape but were uniformly deeply staining. Sections stained with Van Geisen's connective tissue stain confirmed the fine reticular nature of the connective tissue. Sections stained for fat showed only a few scattered cells which contained definite fatty droplets.

Before beginning the discussion of these cases I would like briefly to describe a tumour of the breast which was recently removed at the Royal Victoria Hospital. The tumour, situated near the nipple, was about the size of a goose egg, firm and white. Microscopically it was well differentiated from the surrounding structures but the axillary glands were enlarged, white and firm, and evidently involved by lymphatic extension of the growth.

While the sections showed in part a typical carcinoma of the breast, which was the diagnosis made in this case, there were areas which exactly resembled some of the pictures shown in the renal tumours, just described. For example, groups and islands of polyhedral cells, which were clear or vacuolated with round deeply staining nuclei.

Breast sections stained with Soudan III showed only fatty

infiltration of the tissue. No fat could be demonstrated in the cancer cells.

Having briefly described both the gross and microscopic appearance of these tumours let us see how the evidence for and against their classification as so-called hypernephroma balances up.

1. The position of the tumours:

In this short series only one (Case 4) corresponds exactly to Grawitz's description of small encapsulated tumours usually situated on the surface of the kidney at or near the upper pole. The others occupy various positions and involve and have destroyed a great part of the kidney substance. This, of course, is not absolute, as later investigation has shown other positions of these tumours.

2. The gross appearance of the tumours:

The point of resemblance which is most striking, is that part of these tumours present a fatty yellowish appearance strongly resembling that of the cortex of the adrenal.

3. The general microscopic features:

In places we find that the tissue is arranged in columns or cords; this being interpreted as a point in favour of its adrenal origin.

4. The appearance of the individual cells.

The similarity of the cells of the adrenals to those of the tumour being of charactertistic honeycombed, clear protoplasm. The nuclei are not distinctive.

5. Fat:

This is one of Grawitz's main points. Fat can easily be demonstrated in the adrenal cortex. In our series the proportion of cells in the tumours which contained fatty droplets varied. In one or two the amount was very marked.

6. Hyaline degeneration of vessels:

This was a point which Grawitz brought out in one of his tumours in which he demonstrated hyaline degeneration in the vessels of the adrenal and also in those of the tumour while the renal vessels were free. This we have not demonstrated, no noticeable hyaline degeneration being present.

Against: 1. The position of the tumours:

Three and possibly four of the series seem to me to have grown irregularly and not by any means as supra or subcapsular growths.

2. The gross appearance of the growth:

Three of these tumours show soft necrotic and hæmorrhagic areas. This feature, however, on careful analysis is common to

many forms of tumours especially when they attain any marked size and are very cellular One tumour (Case 5) does not show any of the gross appearances supposed to be characteristic of this group.

3. The general microscopic appearances:

In only scattered fields, in three cases, could I see any attempt at a columnar or cord-like arrangement of the cells such as are seen in the cortex of the adrenal. The general arrangement was in large irregular solid areas (which is so frequently seen in cancers of the breast, etc.) or an indefinite tubular arrangement.

4. The appearance of the individual cells:

They show very little, if any, protoplasm, (the protoplasm of the adrenal takes a well marked stain with H and E). The clear appearance is by no means specific, I have seen small groups of cells of this type in the liver. Minot makes the statement that they are often noted in rapidly growing normal tissues and due often to excessive glycogen contents, which we now know to occur in other than suprarenal cell. That they occur in other tumours is demonstrated in the specimen of breast cancer which has been described.

5. Fat:

Fat is extremely variable. In one of the series the amount of fat is negligible. In two it is large in amount. The presence of this fat in my opinion is not as strong an argument in support of the desciples of Grawitz as generally imagined. Kidney epithelium (protoplasm) may contain as much as 20 per cent. of fat held in combination which does not show grossly or microscopically (Ziegler). Under certain conditions this fat may be liberated so that it becomes visible. The probable change in the protoplasmic make up of tumour cells might account for the fat contents becoming visible. In addition fatty degeneration in other tumour cells is also found, sometimes sufficiently great to simulate suprarenal cells.

While it is not possible to draw too definite conclusions from this short series, I think that in four of the cases, at any rate, from the evidence just brought forward, as much is in favour of their being primary renal tumours as suprarenal rest derivatives.

A larger, carefully studied series, must decide this question more definitely.

I wish to express my thanks to Professor Oertel for his kind criticism and help.

Case Report

CONGENITAL BILATERAL ANOPHTHALMOS

By J. Rosenbaum, M.D.

Clinical Assistant in Ophthalmology, Royal Victoria Hospital Montreal

THE following case of anophthalmos, which I have the pleasure of bringing before your attention, is not recorded for the purpose of deserving great clinical benefit from its consideration, but purely on account of its scientific bearing and the possibility of throwing some light on the intra-uterine disturbance that may cause the development of the monstrosities.

Mrs. A. M., aged twenty-eight, multipara, normal labour, delivered by Dr. Schacher, through whose courtesy I had the privilege of seeing the case, gave birth January 20th, 1917, to a full term male child having a congenital absence of both eyes. The father's age is thirty-five, and he is first cousin to the mother. There is nothing abnormal about the parents' eyes. The first child, a boy of four years, has a bilateral rotatory nystagmus, a convergent strabismus of thirty-five degrees of the left eye and an error of refraction of each eye of five diopters.

On inspection the baby seemed to be asleep. The lids were depressed exactly as in a case of enucleation of the eyeballs.

The lids were separated and the cavity inspected, but the most careful examination could not reveal anything that would indicate the presence of an eye-ball, either large or small.

There was a good conjunctival sac, the eye-lids, eye-lashes, canaliculi, and tear passages and glands were quite normal. In other respects the child was apparently healthy and well developed. On the third day, however, the doctor reported that the child died in convulsions. It was impossible to secure an autopsy.

In looking up the literature on the subject, I find that the total number of cases reported thus far seems to be in the neighbourhood of ninety.

Read before meeting at the Canadian Medical Association section of Ophthalmology, June, 1917.

The condition is more frequently observed to be bilateral than unilateral.

The collected statistics of Von Hippel show the condition to be bilateral in more than 60 per cent. of the cases. Of the cases recorded in which other abnormalities coexisted, the following are most interesting:

In J. Walker Park's case, the eye-lids were adherent at their margins with the exception of about one eighth of an inch. The canaliculi were absent in both eyes.

In Schmitt Rimple's case a small white speck as large as a pea was visible.

A. J. Gillet reports a case in which there was an absence of only one eye and also a congenital curvature of the spine.

In A. H. P. Dawkey's case, the left eye was normal. Right eye, anophthalmos.

Von Graefe. Right eye anophthalmos, left eye normal, but there was a coloboma of the upper and lower lids.

In C. Range's case the left eye was normal, but the right eye was represented by a small stump that appeared to be fibrous tissue which moved in harmony with the left.

Von de Bury reported a case of a calf in which, in addition to the bilateral anophthalmos, there was a congenital absence of the tail.

Land of London, in "Norris and Oliver System of Diseases of the Eyes", says that dissection generally shows rudimentary globes at the apex of the orbit, but also reports ten cases through the *Royal London Reports* in which no rudimentary globes could be found.

Some have attempted experimentally to produce cases of anophthalmos, and among these, Stockard, in a most interesting and illuminating article, gives the results of experiments which have extended over a period of several years. He bred alcoholized animals through several generations and the defects caused by the alcohol treatment seemed to be largely confined to the central nervous system and organs of special senses.

Various degrees of degenerations of the eyes were noted. Opaque corneæ cataracts, small defective eyes, complete absence of one and finally complete absence of both eyes. He also obtained similar defects by directly treating the eggs of fish with solutions of alcohol and by treating hen's eggs with alcohol fumes either before or during incubation.

The most generally accepted theory of the monstrosity is,

that no primary optic vesicle has budded out from the anterior primary encephalic vesicle, or, that having budded out, it has failed to form a secondary optic vesicle, possibly due to some interference of nutrition.

From the foregoing we note that the affection may present itself as: (*a*) unilateral anophthalmos; (*b*) bilateral anophthalmos; (*c*) lids are adherent; (*d*) stump of an eye; (*e*) not even a rudiment of an eye.

References:

Stockard, C. R.—*Interstate Med. Journal*, June, 1916.
Von Graefe.—*Berliner Klunische Wochenshrift*, p. 794. Vol. xli, 1904.
Ramage, C.—*B. M. J.*, p. 681, 1894.
Von de Bury.—*Archiv. fur Klinische Medicin C. V.*, 3, 1887.
Lang.—"Norris and Oliver System of Diseases of the Eye." Graaf Saemisch Text-Book.

The Honourable Mr. Justice Hodgins, in his capacity of Royal Commissioner in respect to legislation for the abatement of venereal diseases and for improvement of conditions with respect to the feeble-minded in Ontario, held his first sitting in connection with the latter phase of his commission duties in Toronto, early in February. He briefly outlined the procedure to be followed in the prosecution of the inquiry, and intimated that all who desire to testify in connection with the Commission's work will be afforded ample opportunity to do so. The scope of the inquiry is wide and covers the determination of the extent to which feeble-mindedness prevails in the province; the classification and training of defectives; the nature and equipment of institutions designed for their care and possible cure; guardianship, and the eligibility of defectives as witnesses in the courts of law

Editorial

PENSIONS TO BE AWARDED BY THE DISTRICTS

THE new regulations announced whereby the pensions for discharged soldiers are to be awarded by the district examiners instead of by the medical advisers at Ottawa should meet with the approval of the profession. Although this is largely a medical matter, we have refrained from expressing an opinion because it would have to be critical of the existing arrangements of the Pension Commissioners. As they were breaking new ground, it was felt that no unnecessary obstacles should be placed in their way. Besides, it had always been felt that the course they pursued would be changed as soon as they had a properly trained staff put in the district offices.

The great advantage of the old method, whereby the awards were all made in Ottawa, after considering a written description of the man's disability and medical history, was that the treatment of the men would be uniform in every part of Canada. This can still be secured by the checking of district awards under the new system. If this is carefully done, there should be no great difficulty in seeing that all the districts follow the same standard.

The old system, of a man, who had never seen the case, making the award was so contrary to all medical practice that it had few supporters in the profession. No doctor, of any standing, will give an opinion on a case until he has actually seen it.

The danger of the new system is that the district examiners will get into a rut that will be injurious both to the soldier and the government. This can only be obviated by circulating the latest information on the subject as soon as reported by the different countries concerned in the awarding pensions.

Annual conventions of the examiners for the purpose of discussing new difficulties as they arise and the methods found useful for solving them by the various members would be exceeding useful, and would warrant the expense of holding them.

DEMOBILIZATION OF THE MEDICAL OFFICERS

WE are glad to publish in this number the views of one of the overseas officers on this subject, and would welcome short articles from other members of the profession, either military or civilian.

The question of the absorption of so many doctors in the short period of demobilization is a complicated one in many ways other than those mentioned by Colonel Williams. The return of the clientele of those, who have been away for a prolonged period, should be settled by a frank discussion by the doctors concerned in the smaller medical societies.

The universities and hospitals have wisely delayed making appointments until the return of all the doctors. It is hoped that when these vacancies are filled, the sacrifice made by those who have been overseas will be taken into consideration. The varied training that these men have had will undoubtedly make for an increased efficiency in these institutions.

THE FRATERNAL SOCIETIES AND TUBERCULOSIS

THE action of the fraternal societies of Montreal in combining their efforts to assist those afflicted with this disease is certainly along the right lines. It is only too plain to all that our governments seldom act until forced to do so by public opinion. This is difficult to arouse for any matter pertaining to the health of the people. As long as our public

life consists of one party endeavouring to stay in power and the other struggling to supplant it, conditions can hardly be expected to improve.

The fraternal societies all pay a great deal of attention to the health of their members, so it is not surprising to find them trying to force the governments to do more in this regard. The inadequacy of the accommodation in all the provinces for this class of patient is only too apparent to physicians in contact with the disease. The societies have had this matter brought home to them by repeatedly being unable to get for their members the treatment required.

This question is of vital interest to the profession as a whole, not only because we see the need so clearly, but when the puplic is educated up to these facts they will demand greater attention to all health matters. When this stage is reached, we shall see the profession exploited by a political party as has happened in the recent elections in Great Britain.

Lieutenant-Colonel J. W. McIntosh, member for Vancouver, and but recently returned from the front, is a strong advocate for a state medical service. In addressing the Great War Veterans' Association some time ago, he said the standard of health would be immeasurably raised throughout the province under this system. Over one hundred doctors had gone overseas from Vancouver alone, and the great percentage of them had not yet returned. They would come back to find their practices gone, and would have to start all over again. Such men, as well as many others, would welcome government legislation along the lines he proposed. The government had already a form of state medical service, he maintained, in the operation of the Workmen's Compensation Board in regards to accidents. His plan would go further and take in all people who wished to have their medical work done on the contracts plan. The service would be

optional and would not interfere with those who wished to be attended by their private physicians. The poor could not afford expert medical advice now; by state medical service they would receive it.

THE graduate nurses of Ontario through the legislative committee of their association, met members of the provincial cabinet lately for the purpose of correcting certain misconceptions concerning the training and regulation of the nursing profession as it exists at the present time, in Mr. Justice Hodgin's report. Exception was taken to one statement in the report. The registration referred to in the Act consists of enrolling under the direction of the provincial secretary the names of such nurses as have complied with regulations prescribed by the Lieutenant-Governor-in-Council. As yet this has never been done, but the clause "instead thereof the nurses have formed voluntary associations for this purpose" is not correct, and is likewise misleading. The voluntary associations referred to are of a threefold nature: the training schools in connection with the different hospitals; the various nurses' registries throughout the province, and the Graduate Nurses' Association of Ontario. None of these exist for the purpose referred to in the Act. As a matter of fact, all were in existence before the Act was passed. The convener of the committee stated that the Graduate Nurses' Association did not conduct or control any registry of nurses, and had nothing to do with any registry of nurses in the province. The various registries are voluntary organizations with the object of providing the public with a convenient medium through which nurses may be secured when such are needed in the home. What the Association petition is that it should be made difficult or impossible for women to pass as trained or graduated nurses when they are not such. For this purpose they simply ask that the power of the Act be put into operation and to facilitate this, suggest certain regulations in accordance

with which nurses might be enrolled in a provincial government register and subsequently be designated a registered nurse and entitled to use the letters R. N.

THE office of the Surgeon-General of the United States army has been authorized by the war department to arrange a series of talks given by specially selected medical officers to all the men before they are mustered out. These will draw attention to the proper care of the body, how to protect against communicable diseases, the value of inoculation against disease, prevention of epidemics, general sanitation as applied to civil communities, and other subjects relating to health. Not only have the men benefited by becoming habituated to personal hygiene and restraints from indulgence enforced by the army, but the knowledge of measures to be taken for public health, it is believed, will result in the creation of a demand for improved community sanitation.

A CANADIAN physician has just returned home for a few months' leave having spent the past thirteen years in Brazil with a commission seeking to eradicate yellow fever from that country. As a result of the efforts of his commission, with the co-operation of the Brazilian authorities, Dr. Wolferstan Thomas states that yellow fever has been practically annihilated, with the exception of Pernambuco in the southern part of the country. The Commission, appointed by the Liverpool School of Medicine, to which he has been attached since 1902, worked principally in the north, around Manaus, 1,200 miles up the Amazon from the coast. Though the yellow fever germ, he says, has never been identified or isolated, it is established that the only carrier is the female mosquito of a particular species which breeds only in stagnant water about domestic premises. This known, the only

thing required to eliminate the disease completely was rigid sanitation, which has now been effected throughout the country. A system of weekly inspection prevents a lapse into the previous unsanitary conditions. As a result of modern methods, other tropical diseases are also disappearing in Brazil. Beri-beri, one of the most malignant species of disease in the interior of the country, has gone, as a result of conditions brought about by the war, the doctor stated. Brazil was compelled to develop new industries owing to the curtailment of her imports during the war. One of these was the growing of rice; previously the country imported all its rice from Ceylon and India, which was shipped in a polished state, the outer vitumin covering being removed. Brazilian rice is now used with the vitumin covering intact, and it has been discovered that the absence of this covering, necessary for proper digestion, was the cause of beri-beri. In September, Dr. Thomas undertook an expedition up the Rio Negro, working on malaria and hookworm cases which he will continue when he returns to Brazil.

The Association

LETTER FROM THE PRESIDENT

To the Members of the Association:—

I wish to express my high appreciation of the honour conferred upon me by the members of our Association in electing me their President for this year, and also to take the opportunity of thanking them for having accepted our invitation to come to Quebec for the next annual meeting. We trust our city will prove worthy of such an important event as the meetings of the Association always are.

I must acknowledge the efforts of our Committees in the preparation of the programme; and I bespeak the co-operation and good will of every member in helping to make this, our fiftieth session, an interesting and profitable one.

Many prominent Canadians have already promised papers, and as we also expect England and France to send delegates, we are confident of having a full measure of success.

I must draw the attention of our members to the fact that the dates of the meeting as chosen originally have been changed to June 25th, 26th and 27th. It was found that the former dates clashed with the meetings of other societies which members wished to attend.

Yours faithfully,

S. Grondin

Public Health

IMPORTANT CONFERENCE OF PUBLIC HEALTH OFFICERS

FEBRUARY 3RD, 1919

THE first steps toward the organization of a Social Hygiene programme for Canada were taken, when representatives of a number of the provinces met in Ottawa at the call of the Acting Premier, Sir Thomas White, to discuss legislation for the control of venereal diseases.

This important conference was brought together at the suggestion of the military authorities. Each province was invited to send its chief health officer.

While some of these were unable to be in attendance, those provinces which could not send representatives sent telegrams expressing their regret, as well as their cordial sympathy with the objects of the conference.

Those present were: Honourable J. A. Calder, Minister of Immigration and Colonization; Major-General J. T. Fotheringham, D.G.M.S.; Dr. P. H. Bryce, Chief Medical Officer, Department of Immigration, Ottawa; Dr. Gordon Bell, Provincial Health Officer, Manitoba; Dr. George G. Melvin, Chief Medical Officer of Health, New Brunswick; Captain Gordon Bates, Toronto; Honourable William P. Roberts, Minister of Health, New Brunswick; J. W. S. McCullough, Lieutenant-Colonel, C.A.M.C., Chief Officer of Health, Ontario; Honourable W. D. McPherson, Provincial Secretary, Ontario; William Hutchinson, Major, C.A.M.C., Montreal; Dr. J. A. Hutchinson, President Canadian Public Health Association, Montreal; Dr. Elzear Pelletier, Superior Board of Health, Quebec; Dr. A. H. Desloges, Medical Superintendent of the Insane, Quebec; Dr. Arthur Simard, President Superior Board of Health, Quebec; Dr. M. M. Seymour, Commissioner of Health, Saskatchewan; Mr. Vincent Massey, who acted as Secretary to the Conference.

The chair was taken in the morning by the Honourable J. A. Calder, and in the afternoon by Honourable W. D. McPherson, Provincial Secretary of Ontario. At the morning session, the Con-

ference was addressed by Major-General J. T. Fotheringham, D.G.M.S., Major Wm. Hutchinson, C.A.M.C., and Captain Gordon Bates, C.A.M.C., Toronto. After considerable discussion the following resolutions were passed.

WHEREAS in the "Reconstruction of Canada" following the Great War, there are very many important problems that must be taken into consideration such as Finance, Soldier's Re-establishment, Labour, etc. Among these the conservation of the health and lives of the people is equally if not most important to be dealt with—as LIFE is the Country's greatest asset—

THEREFORE RESOLVED that this Conference whose personnel is made up by representatives from the various Provincial Governments of Canada together with their Chief Medical Officers, assembled at Ottawa, this third day of February, 1919, at the call of the Acting Premier, the Honourable Sir Thomas White—for consideration of the venereal disease question, do memorialize the Government of Canada that it is in the interests of the future health and life of the citizenship of Canada that there should be immediately established a Federal Department of Health.

That the representative of the several Governments and Health Departments of the Provinces of Saskatchewan, Manitoba, Ontario, Quebec, and New Brunswick assembled in conference, at the call of the Acting Premier of Canada, are agreed, subject to the consideration of the governments of the respective provinces, that the following general principles are necessary in any provincial legislation looking to the prevention and control of venereal diseases, in the said provinces:

a. Compulsory notification.

b. Compulsory treatment.

c. Standardized treatment.

d. Authority to examine persons suspected of being affected with venereal disease.

e. Prevention of quack treatment, quack remedies, and of the advertising of such treatment and remedies.

f. Right of entry of Public Health Authorities.

g. Prevention of infection—see Ontario Act, Section No. 8.

h. Power to make regulations, by Order-in-Council, Section 13, Ontario Act.

i. Liability of municipalities or local authorities—Section 14 (1) Ontario Act.

j. Penalties—Section 13 (j), Ontario Act

That the Criminal Code of Canada be amended so that a person who is suffering from venereal disease in a communicable form, who knowingly or by culpable negligence communicates such venereal disease to any person shall be guilty of a criminal offence.

Provided That (a) A person shall not be convicted under this section if that person proves that he or she had reasonable grounds to believe that he or she was free from venereal disease in a communicable form at the time the alleged offence was committed, and (b), no person shall be convicted of any offence under this section upon the evidence of one witness unless such witness be corroborated in some material particular by evidence implicating the accused.

In view of the fact that the Government of Great Britain supports the treatment of venereal disease in the proportion of 75 per cent. to that of 25 per cent. by the local authorities this conference respectfully urges upon the Government of Canada, to provide financial assistance to the provinces on a scale similar to that in Great Britain, for the treatment of these affections.

That this Conference suggests that all seamen coming within the purview of the Immigration Act, be examined for freedom from venereal diseases before being allowed ashore at Canadian seaports.

Whereas the successful control of venereal diseases depends among other factors upon,

Facilities for the free or readily available and adequate treatment of these disease, and

Whereas the cost of one of the remedies for the cure of syphilis, viz: salvarsan, and remedies of that character, is excessive, and

Whereas the production of this remedy in Canada is monopolized by two persons or firms, who have been licensed to carry on such production.

Therefore, be it resolved, that this conference do respectfully recommend that the Government of Canada, shall give the right of production of salvarsan or other remedies of this nature to any person or firm or corporation satisfying the head of the Health Department, of any province, or in the event of the establishment of a Federal Department of Health of the head of that department of his or their ability to successfully produce a satisfactory product of this kind.

That it is the feeling of this Conference that a further meeting representative of social agencies should be called to discuss the constructive social measures which may be undertaken to combat the existence of venereal diseases in the Dominion.

That legislation be made to prevent the advertising, selling, or giving of quack medicines to cure venereal disease.

While no formal resolution was passed it was the strong feeling of the Conference that legislation dealing with venereal disease to be affective should be supplemented by the further development of the machinery necessary to enforce it.

Obituary

DONALD ALEXANDER CAMPBELL, M.D.

Halifax loses one of its foremost physicians in the death of Dr. D. A. Campbell, who passed away on January 7th. He had been in ill-health for some time and his death was not unexpected. During the past forty years he was one of the leading general practitioners and surgeons in Halifax, a period which was marked with signal success and usefulness. He entered the old Halifax Medical College, then in its first connection with Dalhousie University, and graduated in medicine in 1874. He took a post-graduate course at Johns Hopkins. For many years he was professor of medicine at Dalhousie University and a governor of that institution. His only son, Dr. George Campbell, a young physician of great promise, died suddenly some years ago, and his father endowed in his memory a chair of anatomy in the university.

Dr. Campbell was an examiner of the local branch of the Royal Sanitary Institute. He was an active member of the Sixty-third Regiment, possessing the long service decoration and being gazetted honorary lieutenant-colonel in 1906.

In diagnosis, Dr. Campbell was considered especially skilful. He was a student and kept fully abreast of the advance of medical science. In addition to technical skill, he was endowed with great powers of sympathy and understanding for those in suffering. He

will be greatly missed for he was much beloved wherever known. The board of governors, the senate, the faculty of medicine and the undergraduates in medicine attended the funeral, and many other prominent citizens who had been friends of the deceased assembled round the grave at Fairview cemetery. The Rev. J. Y. Mackinnon, assisted by Dr. John McMillan and Professor Falconer of Pine Hill, took the funeral service. Rev. Dr. John Forrest, in a brief and eloquent oration, expressed the general regret felt at the loss of such a man.

DR. JOHN THEOPHILUS JENKINS

John Theophilus Jenkins, M.D., M.R.C.S., at the advanced age of ninety years, and known as "The Grand Old Man of the Island", passed away at Charlottetown, on January 17th. It was hoped with his iron constitution and remarkable vigour of mind and body that he would have rounded out the century, but a serious accident last summer was the beginning of the end. He rallied for a time but finally succumbed.

Dr. Jenkins was born at Charlottetown on January 1st, 1829. He was educated in the province and in England, where he received his medical and surgical degrees, graduating from St. Bartholomew's Hospital, London. He served through the Crimean war as a surgeon on the combined staffs of the British and Turkish armies, receiving the British and Turkish war medals. After the war he returned to Canada and settled at Upton, North River, where he took up the practice of his profession.

Dr. Jenkins figured actively in public life. He ran his first election in 1867 being returned as a representative for Charlottetown in the local House. He was elected to the Provincial Legislature of Charlottetown, sitting from 1873 to 1876. He was re-elected for Queens in 1884. He was an able debater, displaying a wide and thorough knowledge of the issues of the day. He was Liberal-Conservative in politics with independent leanings. Advancing years did not lessen his interest in public affairs, and his contributions to the press were pointed, forceful, and logical. His death removes a venerable yet picturesque figure, the personification of straightforwardness, honour, and integrity.

DR. RICHARD ANDREW REEVE

In the sudden death of Dr. Richard Andrew Reeve, one of the best known and most eminent eye specialists in Canada has been removed. The doctor was returning to his home, after attending

a committee meeting at Toronto University, when he was seen to fall, and though medical aid was instantly summoned, life was found to be extinct. Dr. Reeve was born in Toronto in 1842, and though no longer a young man, was one of the busiest and most skilful practitioners in the city. He obtained his B.A. degree and won the silver medal in Natural Sciences in Toronto University in 1862, receiving his degree of M.D. a few years later, as well as obtaining the same degree from Queen's University, Kingston. In 1902 he was presented with the honorary degree of LL.D. by Toronto University, and in 1911 received the same honour at McGill and Birmingham Universities. He was a Fellow of the Royal College of Physicians and Surgeons at Kingston, and for some years was assistant surgeon to the Toronto Eye and Ear Infirmary. Later he became a specialist in the treatment of the eye and ear.

At the University his career was looked upon by the authorities as one of the greatest usefulness. He was lecturer in ophthalmics in the early nineties, and in 1896 was elected dean of the faculty of medicine, which he held until his resignation in 1908. From 1904 to 1907 he was president of the University Alumni Association, and it was during his term of office the association first became organized with its present scope of activities. Dr. Reeve was at one time president of the Canadian Medical Association, and he was a delegate to the British Medical Congress in 1910. He was an active member of the Central Methodist Church, was very much interested in all moral and church work, and was an excellent type of the high-minded professional man. A warm tribute was given to the late physician by the president of the University, who said: "We looked upon him as one of the greatest friends of the University. He was a man who served greatly, and his name will long be cherished. He was an ideal dean and a man whom everyone respected."

CAPTAIN HARRY SMITH, M.D.

Toronto has lost another fine physician, an energetic and untiring worker, beloved by all with whom he came in contact. Captain (Dr.) Harry Smith died recently from pneumonia. The children of the city especially have lost a devoted friend. Before he went overseas he was actively engaged in playground work under the Toronto Playground Association in 1911 and 1912. He then had charge of the Canadian Northern Playground. Sub-

sequently the City Playgrounds, Parks Department, and the Toronto Association amalgamated and in 1913 Dr. Smith was put in charge of the Osler Playground, where he remained till 1915, when he enlisted for overseas. On his return in 1917, he again associated himself with the Toronto Playground Association, for which body he acted as secretary and did much to further the community work in schools. A fine athlete, he was beloved and respected by all the boys with whom he came in contact.

But it was not only in his civilian practice that Dr. Smith won high esteem. Five hundred soldiers and officers, some of whom had been prisoners of war in Germany, crowded around the graveside, standing at attention in respect for the dead officer of whom they were all so proud. The exclamation of one of the returned soldiers standing there was a significant comment on what the men thought of their late captain: "He was the best ever."

Dr. Daniel Mahoney, assistant superintendent of the Vancouver General Hospital, died on New Year's Day from pneumonia following influenza. He worked strenuously, until taken ill himself, in combatting the very serious influenza epidemic, and finally fell a prey to the deadly disease. Dr. Mahoney graduated from Queen's Medical School in 1916. He then removed to Calgary, where he was connected with the staff of the Calgary General Hospital. About eighteen months ago he succeeded Dr. J. A. Smith, as assistant superintendent of the Vancouver General Hospital. Dr. M. T. McEachern, superintendent of the institution, in referring to the death of his colleague, said: "Words fail me to pay the high tribute of which my late assistant and dear friend, Dr. Mahoney, is worthy. His death at the Vancouver General Hospital has cast a gloom over the whole institution, in which he was so closely wrapped up, as well as over our city at large. He was a man among men and an outstanding personality in his profession. With his death has ended a brilliant career."

Dr. Charles A. Jones, senior, Mount Forest's pioneer medical practitioner, and ex-mayor of the town, died from heart failure on January 19th. His son, Dr. Charles Jones, junior, was associated with him in his practice. Two other sons are also doctors. Dr. Jones was seventy years of age and had practised in Mount Forest for forty years.

Dr. G. W. Averill, one of the first settlers in Grand Forks, B.C., died recently of influenza, while on a visit to the coast.

Miscellany

News

MARITIME PROVINCES

THE good results of the Nova Scotia Sanitorium at Kentville, for the year 1917, has just been published. At the time of discharge the condition of the tuberculosis patients was as follows: Disease arrested, four or 5·7 per cent.; disease apparently arrested, thirty-four or 50 per cent.; disease quiescent, nineteen or 27·1 per cent.; improved, eleven or 15·7 per cent.; unimproved, one or 1·5 per cent. The Provincial Sanitorium has just added to the new infirmary a modern *x*-ray equipment. Dr. Collins, a prominent specialist, operates the machine. He is also a specialist in tuberculosis and diseases of the throat and lungs. There are two civilian pavilions, one for each sex, and seven military pavilions. The patients who are able, are given vocational training, and there is some very nice work turned out by some of the returned men.

A SPECIAL conference was held in Moncton, in December, between the provincial health officials and medical representatives of the county, for the purpose of discussing the duties that will fall to the sub-districts. In connection with these the Provincial Government gives the services of the Bureau of Health, including laboratory grants. Addresses were given by the Hon. Dr. Roberts, minister of public health, and Dr. Melvin, of St. John, chief medical officer for the province. Hon. Dr. Roberts showed the necessity of a strong organization of public health in order that the better interests of the people may be safeguarded. He contrasted the old Provincial Board of Health and the present Department of Health, showing the benefits of an organization with machinery behind it to see that all of its regulations are carried out to the letter, even to the remotest parts of the province. He showed in a few words the economy of the people generally, inasmuch as there are about 80,000 males (to say nothing of women) in the province who are earning a livelihood at a minimum of $2 a day. About $160,000 daily, or about $48,000,000 a year. Fully five per cent. of these are rendered incapable of following their occupations as

a result of physical incapacitation brought about by diseases which could be prevented. If they were able to effect a saving of only 50% of these, there would be a saving of $1,000,000 in the earning power of the province. The speaker pointed out a unique feature of the new Health Act. In no other province in Canada, or State in the Union, were three interests vested in only one department. Sanitation, vital statistics, and medical inspection of schools.

At the annual meeting of the St. John Association for the Prevention of Tuberculosis, an interesting report of the work of the past year was given, embracing the period from November, 1917, to November, 1918. Addresses on the various phases of the movement are to be given by Dr. Abrahamson, provincial pathologist; Dr. G. G. Melvin, district medical officer, and Dr. Farris, superintendent of St. John County Hospital. The dispensary was open one hundred and eighty-four days during the year; sixty-seven days for children and one hundred and seventeen for adults. In addition to this, Dr. Townshend and Dr. Farris held clinics there. On the other days the dispensary physician, Dr. Logie and a nurse were in attendance. In all, four hundred and fifty-nine patients had been examined—a smaller number than last year. The medical inspection of schools, which the board had been strongly urging, had at last been realized, and Dr. Mabel Hannington had been appointed inspector. In June, a special course on tuberculosis nursing was held in New York, to which the board decided to send Miss Brophy, feeling that the dispensary would be greatly benefitted thereby. During the year, Miss Brophy made one thousand, four hundred and twenty-five visits, which are bearing fruit in the education of the patients.

QUEBEC

At a recent meeting of the health committee at the City Hall, Dr. Paquin presented a report in detail in connection with the recent influenza epidemic in the city of Quebec. There were twenty-five thousand cases reported, and possibly five thousand cases not reported, and the total number of deaths from the disease is estimated at four hundred and forty-one. The expenses entailed to meet the exigency inclusive of the emergency hospitals, equipment, medicines, supplies, etc., totals $25,687.43. The total cases in city wards, treated in dwellings, were twenty-four thousand, five hundred and fifty-three.

Dr. P. V. Faucher has been appointed professor of materia medica in the faculty of medicine, Laval University.

An addition is to be erected to the Royal Victoria Hospital, Montreal, at a cost of $12,000. McGill University is planning the building of a memorial hall to honour her fallen graduates and undergraduates. It will take the form of a convocation hall, and the probable estimate is $150,000.

The president of the Baby Welfare committee, in his New Year's letter sent out to the members, declares they have gone on record to reduce the infant mortality of Montreal during 1919 by one thousand lives. He outlines the recommendations made by a special committee that had investigated local conditions: "That the present equipment and organization in operation in the city of Montreal is totally inadequate to make any visible impression on the abnormally high infant death rate. That much more extensive, efficient and modern methods must be resorted to without delay.

"An exhaustive survey of the infant movement should be commenced immediately, covering the entire city, and dealing with every phase of the infant and child problems. The survey to be under the direction of a competent infant welfare expert, assisted by trained social workers familiar with conditions in Montreal. A central office to be established in which to tabulate and arrange the information collected during the survey; this report to be published during the survey in French and English for distribution. The Baby Welfare Exhibit in May will be greatly benefited by the material thus secured.

"That the present civic expenditure on infant welfare work is totally insufficient to meet the pressing needs, and unworthy of a city of a population of nearly three quarters of a million persons. The miserable sum of $12,000 was allowed during 1918 for the entire health centres and milk stations (twenty-nine in all) by the city of Montreal." Mr. McBride, the president, concludes with this impressive remark: "We have sacrificed about five thousand infants annually in the last ten years." Dr. Devlin, medical superintendent of St. Jean de Dieu Hospital, Montreal, in a recent speech made to arouse the people of this Dominion to the need of some concerted system for combatting infant mortality, stated, that a million people had been lost to Canada in the past half century through infant mortality alone. He urged the establishment of a ministry of public health.

An interesting review of the activities of the Ottawa board of

health for the past year has been embodied in the annual report submitted by Dr. Campbell Laidlaw, chairman of the board. He especially emphasized the greater need for education along the lines of hygiene and sanitation in schools and elsewhere. He favoured the appointment of inspectors who could act both as teachers and medical officers. He specially desired that an attempt should be made to co-ordinate the work of the health department and the various charitable organizations in the city to a degree which will mean less overlapping and less expense. The report added that a scheme might be worked out to secure co-operation among nurses attached to the city health department, the Victorian Order, and the May Court Club. Speaking of the influenza epidemic, Dr. Laidlaw advances the theory that fatalities occurred mostly among those who "regarded the disease with indifference", which cases "reflect" the desirability of proper instruction.

The amalgamation of the Ottawa General Hospital with St. Luke's Hospital, for the purpose of the erection of a modern hospital suitable to the present and future requirements of the city, is favoured by the board of trustees, the medical boards of both hospitals, the board of control and the city council. Negotiations have also been entered into with Queen's Unversity, Kingston, to secure their co-operation in the erection of such an institution with a view of utilizing it for teaching purposes in the medical department of that university.

ONTARIO

The Toronto city council has been asked to vote a grant of $40,000 towards liquidating the $89,753 deficit of the Hospital for Sick Children. The hospital's request is the subject of a careful report by the Finance Commissioner and the Social Service Commission, it being pointed out that while the city pays a per diem allowance of $2.23 per patient, the province pays 30 cents. Dealing with the whole hospitals' question, the report's recommendation is that a board representative of the city council and each institution be created to prepare the annual estimates and to report upon special grants.

The Hon. Dr. Pyne, former Minister of Education, has been appointed by the Ontario Government to the Board of Governors of the University of Toronto. Dr. Lorne B. Graham, Toronto, and Dr. Hector O. McAlister, Toronto, have received the license of

The Royal College of Physicians. Twenty candidates passed the November examinations of the College of Physicians and Surgeons of Ontario, which extended from the 12th to the 18th of the month.

A HOSPITAL building, to cost $500,000, is to be erected for the Department of Soldiers' Civil Re-establishment, near Woodbridge, about fifteen miles from Toronto. The hospital is being financed by the Ontario and Federal governments jointly, with a condition that the Civil Soldiers' Department surrenders occupancy at the expiration of five years. It is expected that the authorities will centralize all tuberculosis cases at the new institution, and in all probability it will be decidedly a medical institution, with restraining or vocational facilities, as in military hospitals.

A LARGE deputation, interpreting the views of the Ontario College of Physicians and Surgeons, recently made representations to the government with respect to the recommendations affecting the practice of medicine contained in the Hodgins' report. The principal spokesmen were Dr. Ferguson, of London, president; Dr. Emerson, of Goderich, vice-president; Dr. H. Wilberforce, registrar; Dr. H. J. Hamilton and Dr. Eaton King. The college declared itself as generally approving the recommendations made by the commissioner, except that objection is raised to the election of representatives en bloc, the college favouring the practice of the past, which parallels that of the legislature, members being chosen territorially. Opposition is also entered to the suggested appointment of a Director of Medical Services to supervise private practices and the fees charged by practitioners

THE will of the late Dr. A. Orr Hastings bequeathes a large amount to medical institutions: To the Hospital for Sick Children the sum of $4,000 to endow two cots in memory of his late wife, Clara Louise Hastings, and himself; to the Home for Incurable Children, the sum of $3,000; to the Infants' Home and Infirmary, the sum of $2,000; to Grace Hospital, $1,000, to be used in the equipment of the obstetrical department of the hospital; the sum of $3,000 to be applied and used in connection with and for the benefit of the City Mission and Social Service Department. An additional large amount was bequeathed for missionary and educational purposes.

ATTENTION is being concentrated in certain sections of the medi-

cal profession on the care of weak minded people and those suffering from nervous disorders, among whom are many returned soldiers. Professor Peter Sandiford, president of the Toronto branch of the Canadian National Committee for Mental Hygiene, presided at a meeting held in the city recently. Dr. Clarence M. Hincks, secretary of the organization, outlined the work that had been done since its formation last April. There are in Canada 5,000 soldiers suffering from mental disorder; taking this fact into consideration, Dr. Hincks said the military aspect would demand particular effort. It was not necessary to give treatment to the men in the hospitals, but to follow up the cases after they had left the institution. The fact that of the civilians, fifty per cent. were immigrants, called for some alteration in the post-bellum policy to be adopted with regard to admitting foreigners. Before they can be admitted it is probable that some examination, both physical and mental, will be necessary. Dr. C. K. Clark, medical director of the organization, stated that the Government of Manitoba had constructed a course of psychiatrics in one of the hospitals. Dr. Clark also touched on the question of dealing with the mentals in schools. Hon. H. J. Cody said it was rare that governments had taken the lead in reforms of this nature, and paid a tribute to the manner in which the expert medical men had worked.

BRITISH COLUMBIA

The legality or otherwise of prescriptions issued by medical men who are not registered members of the College of Physicians and Surgeons of British Columbia is a point which has been brought to the attention of Commissioner Finlay by druggists of Victoria and Vancouver, who ask a ruling under the provisions of the British Columbia Prohibition Act. The commissioner holds, under the interpretation clauses of the act, that unless the medical man is a duly registered member of the British Columbia organization and pays fees thereto, he does not come within the meaning of the act, and therefore cannot legally prescribe. This ruling, therefore, will debar a number of medical practitioners who have come to British Columbia on military assignments.

Lieutenant Colonel David Donald has returned to Victoria. Before the war he was one of the best known medical men in that city. In 1914 he left Victoria with the 50th Gordon Highlanders as medical officer. He was transferred to the Field Artillery in a

similar capacity. He did heavy work in France, immediately on his arrival, in the fighting zone. For seventeen months he continued with the Canadians, but in 1916 he was appointed president of the Medical Board in London. He was medical officer on the Canadian hospital ship *Letitia* when she struck the rocks off Halifax. In December of last year he went again to France in charge of two Canadian stationary hospitals, and in the German air raid on these was severely injured. On his recovery he was given the position of senior medical officer on the *Aquitania*. Colonel Donald was one of the most ardent workers and teachers in connection with the St. John Ambulance "First Aid" classes years before there was any thought of war.

THE municipalities of Surrey, Delta, and Langley are to be asked to unite in their efforts towards the building of a joint hospital for the federal riding of Delta. The local Victory Loan commission have expressed their readiness to hand over the commission to a fund for that purpose, and a site in the neighbourhood of the Scot Road is the central position designated as suitable alike to all three municipalities. A certain amount of equipment is already at hand in the temporary hospital utilized during the acute stages of the influenza epidemic.

THE Provincial Government has given Vancouver practical assurance that it will co-operate with the city in the building of an emergency hospital to the extent of $15,000. The entire cost is estimated at $30,000. Work on the new hospital was at once commenced, and it was planned to be finished in thirty days. The Royal Inland Hospital at Kamloops has been in difficulties on account of the emergency caused by the influenza epidemic. A number of the hospital board waited on the city council to ask a grant to reinstate the finances of the institution. The board planned the raising of $30,000 by grants from the city, the Provincial government and the Indian department, augmented by a drive on the lines followed in the Victory Loan campaign for public subscription to the hospital cause. The secretary presented a statement showing that five hundred and fifty influenza patients had been treated in the two preceding months. Of these, two hundred and eighty-four were from Kamloops, one hundred and eighty-five from outside points, and eighty-one from the Indian reserve, the various periods aggregated five thousand and two days. The total cost of operating the hospital in October and November had been approximately

$20,000. The council, after hearing the representations, voted $2,000, in addition to two former votes of $500 each. The board of the Nanaimo Emergency Hospital has appointed Mr. John M. Rudd to visit Victoria and make an appeal to the government for financial assistance on the ground that over half the cases treated were residents outside the city limits. The cost of opening the hospital for the treatment of Spanish influenza during the epidemic was in the neighbourhood of $10,000. The new *x*-ray plant has just been installed at the Jubilee Hospital and will be operated by Dr. Rodgers. It is the largest and most modern of such instruments in existence and is fitted with the new control system and a mechanical timing device. A Wheatstone stereoscope has been installed also to assist in the reading of the photographs.

Dr. C. H. Vrooman, for the last eight years superintendent of the King Edward Sanitorium, Tranquille, has resigned his position and gone to Vancouver, as superintendent of the tuberculosis clinic being erected in that city by the Rotary Club. His work will be diagnosis of suspected tubercular cases, a branch of the medical profession in which he is a specialist.

ARMY MEDICAL SERVICES

The Distinguished Service Order has been awarded to Major G. W. Treleaven, M.C., who went overseas with the 4th Canadian Field Ambulance, and was transferred to the 5th. He won the Military Cross in 1916, and was gazetted major in 1917. He has seen forty-one month's active service, and is at present stationed at Bonn.

The bar to the Distinguished Service Order has been awarded to Lieutenant-Colonel Anson Donaldson, of the medical service, for his great initiative in establishing dressing stations directly in the rear of the advancing infantry.

The bar to the Distinguished Service Order has been awarded to Lieutenant-Colonel Thomas Murphy, of the medical service, who assisted the wounded through intense fire, passing frequently through the barrage.

The second bar to the Distinguished Service Order has been awarded to Major George Hall, medicals, and William Kerr Anderson and William Bauld, medicals.

THE Distinguished Conduct Medal has been awarded to E. T. Lockhart, C.A.M.C., and J. H. MacFarland, C.A.M.C.

A BAR to the Military Cross has been awarded to Major Herbert W. Wadge, C.A.M.C., attached to No. 10 Field Ambulance. He received the Cross in 1916 for bravery in one of the engagements at Ypres, when the dressing station over which he had charge was shelled for three hours. At great personal risk he remained at his post and succeeded in evacuating all his patients to a place of safety.

THE Military Cross has been awarded to Captains Neil Black, Sidney Baldwin, T. Briggs, Herman Cameron, Albert Wallace, William Walsh and Ernest Whelpley, all of the Canadian Army Medical Corps.

CAPTAIN F. MCLAY, of the Canadian Army Medical Corps, has been awarded the Military Cross and also the Croix de Guerre.

CAPTAIN GERALD GRANT, C.A.M.C., has been awarded the Military Cross for conspicuous gallantry. He is a son of Lieutenant-Governor Grant of Nova Scotia.

CAPTAIN W. C. MORGAN, C.A.M.C., has been awarded the Military Cross for meritorious service during the war.

THE names of Matron Ethel B. Ridley, of Hamilton, and Dr. A. E. Malloch, also of Hamilton, Ontario, have been mentioned in despatches by Sir Douglas Haig.

Appointments (Canada):—Captain John Wesley Brien is posted for duty at the Hart House, Toronto.

Lieutenant-Colonel Charles Hawkins Gilmour resumes duty in military district No. 2, from military district No. 5.

Captain William Henry Butt is posted for duty under the A.D.M.S., military district No. 2, on ceasing to be seconded to the Royal Air Force.

Lieutenant Ashley William Valens is posted for duty under the A.D.M.S., military district No. 13, from military district No. 2.

Captain Harold St. Clair Wismer is detailed for duty at the Military School of Orthopædic Surgery and Physiotherapy, Hart House, Toronto.

Major William Bernard MacDermott is posted for duty as Officer Commanding the London Military Convalescent Hospital, vice Major John Cameron Wilson.

Major Edward S. Jeffrey, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Captain Joseph Jordan is posted for duty under the A.D.M.S., military district No. 2.

Major (temporary Lieutenant-Colonel) Charles Carter is detailed for duty temporarily as D.A.D.M.S. hospitalization, military district No. 2.

Lieutenant-Colonel David Alexander Whitton is posted for duty as Officer Commanding Camp Hill Hospital, vice Lieutenant-Colonel A. J. MacKenzie.

Captain Hiram Benson Thompson is posted for duty under the A.D.M.S., military district No. 2.

Colonel George Eli Armstrong, C.M.G., is posted for duty as consultant in surgery in military district No. 4, and as surgeon in charge of the proposed special surgical clinic at the Royal Victoria Hospital, Montreal.

Captains Wilfred Elmo Jones White and James Moore are appointed under the A.D.M.S. embarkation and attached to the Clearing Services command.

Lieutenant-Colonel Charles Stanley McVicar is posted for duty as Officer Commanding Dominion Orthopædic Hospital.

The following officers are appointed as medical officers to conducting staffs and attached to the Clearing Services command:

Captain James Wallace Smuck, Major James Allen Williams, Captain Arthur William McArthur, Captain Kelso Carmichael Cairns, Captain Thomas Ronald Dwyer, Captain Albert Theodore Leatherbarrow, Captain Saul Alfred Cloutier, Captain James Henry Egbert, Captain Samuel Astrof.

Lieutenant-Colonel Gilbert Royce is posted for duty under the A.D.M.S., military district No. 2.

Captain Michael Joseph Casserly is posted for duty under the A.D.M.S., military district No. 2.

Captain (acting Major) John Ewart Campbell is posted for duty under the A.D.M.S., military district No. 11.

Captain Donald Cecil McFarland on being appointed for special duty in connection with demobilization overseas is attached to the Clearing Services command.

Promotions: Major Robert Michael Hillary to be Lieutenant-

Colonel whilst specially employed in connection with medical services, military district No. 2.

Lieutenant Aulder Leopold Gerow, military district No. 7, to be Captain.

Lieutenant William Harold Maxwell Johnson, A.M.C. Training Depot No. 1, to be Captain.

Lieutenant William Hunter Woods, A.M.C. Training Depot No. 1, to be Captain.

Returned from Overseas:—Captain L. A. Grier, Captain W. E. Graham, Lieutenant C. E. Lamb, Lieutenant V. B. Persse, Captain Hiram Benson Thompson, Lieutenant-Colonel Edward Cooper Cole, Captain A. R. Perry, Captain J. C. McCullough, Captain W. McCullough, Captain A. F. Argue, Captain (acting Major) H. H. McIntosh, Major W. L. Shannon, Captain G. M. Reid, Captain Walter Walker Wright, Major Thomas Francis O'Hagan, Captain M. W. Macaulay, Captain W. V. Sargent, Lieutenant-Colonel J. F. Moor, Captain R. H. Thomas, Colonel J. M. Elder, Major (acting Lieutenant-Colonel) G. Turner, Captain D. A. McCaulay, Lieutenant-Colonel G. Clingan, Captain H. G. Craig, Major Thomas Pinkerton Bradley, Captain W. L. Muir, Captain Alexander Douglas Dyas, Captain Arthur John Martin, Major H. C. Hall, Captain J. E. Berry, M.C., Captain N. B. Taylor, Captain L. S. Foster, Captain A. B. Blackett, Captain D. St. C. Campbell, Captain W. F. Coy, Major W. A. Groves, Captain C. E. Slatt.

CASUALTIES

Died on Active Service

Lieutenant N. S. C. Frederickson, C.A.M.C., Glenboro, Manitoba.

Captain H. R. Smith, C.A.M.C., Toronto.

G. C. Dyer, C.A.M.C., Portsmouth, Ontario.

G. M. Yeomans, C.A.M.C., Alexander, Manitoba.

E. Radeau, C.A.M.C., Sillery Cove, Quebec.

Book Reviews

TEXT-BOOKS ON NURSING

A Text-book of Physiology for Nurses. By William Gay Christian, M.D., professor of anatomy, Medical College of Virginia, and Charles C. Haskell, M.A., M.D., professor of physiology and pharmacology, Medical College of Virginia. 163 pages, illustrated. Price, $1.75.

Nursing in Diseases of Children. By Carl G. Leo-Wolf, M.D., Chief of Clinic for Sick Babies and Children for the Health Department of the City of Buffalo, N.Y. 305 pages, 72 illustrations. Price, $2.50.

Hygiene for Nurses. By Nolie Mumey, M.D., lecturer in hygiene, chemistry and bacteriology, Logan H. Root's Memorial Training School. 151 pages, 75 illustrations. Price, $1.25

Surgical and War Nursing. By A. H. Barkley, M.D., M.C., F.A.C.S., lecturer at Good Samaritan Hospital Training School for Nurses. 201 pages, 79 illustrations. Price, $1.75. Publishers: C. V. Mosby Company, St. Louis; McAinsh & Co., Ltd., Toronto, 1918.

This series for nurses has been carefully planned, and the authors all show a desire to place the essentials of the different subjects before the attention of readers. One can find no fault with the texts or the work of the publishers. The subject matter has been well chosen and, taken as a whole, the information essential for nurses to know is presented in an agreeable form. In the book on physiology a little too much attention has been devoted to the nervous system at the expense of the other portions which are more important from a nursing point of view.

Surgical nursing is very up-to-date but not of the same value to the undergraduate in a well-equipped training school as the other three. A work of this kind might well have devoted considerable attention to anæsthesia seeing that this work is being done more and more by nurses. The subject is given scant attention and then a large portion of the space is filled with a history of

anæsthesia more or less legendary in character. The portion devoted to War Nursing should be read by all nurses who have not had the privilege of serving Overseas.

The Hygiene shows considerable thought in preparing a book which is very easy to read and yet which contains all the information on this subject which a nurse should know. The illustrations are excellent and are profuse enough to keep the attention on the subject. This book excels in being very superficial and yet including everything on this subject that is really necessary.

The volume on the nursing of children is the most pretentious of the four. This book is excellent for nurses who are interested in this branch of the work. This book abounds in "heart-to-heart" talks with nurses giving them useful hints but in a light vein not often seen in text books. The author has been especially successful in stating all that a nurse should know on this subject without her assuming as well the duties of the physician on the case.

MILITARY SURGERY OF THE ZONE OF THE ADVANCE. By GEORGE DE TARNOWSKY, M.D., F.A.C.S., surgeon to Cook County, and Ravenswood Hospitals, Chicago. Major, M.C., U.S.R., A.E.F., France, 1917–18. 330 pages. Price, $1.50. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

This manual, the seventh of a series, forms a concise text book upon the primary treatment of wounds and injuries met with on the fighting front. Many of the conclusions of the Inter-Allied Surgical Conference (1917) are concluded, as are the standard methods of localization of foreign bodies, as approved by the Surgeon-General's office, U.S.A. The whole manual is a valuable *vade mecum* for the medical officer.

Medical Societies

THE ONTARIO MEDICAL ASSOCIATION

THIRTY-NINTH ANNUAL MEETING, TORONTO, MAY, 1919

THE thirty-ninth annual meeting of the Ontario Medical Association will be held in Toronto on Wednesday, Thursday and Friday, May 28th, 29th and 30th, 1919.

The Committee on General Purposes will meet on Tuesday, May 27th, at 2 p.m

The chairmen and secretaries of the various sections are as follows:—

MEDICINE:—Chairman, Dr. John Sheahan, St. Catharines; Secretary, Dr. F. C. Harrison, Toronto.

SURGERY:—Chairman, Dr. Edmund E. King, Toronto; Secretary, Dr. T. A. Robinson, Toronto.

OBSTETRICS AND GYNÆCOLOGY:—Chairman, Dr. B. P. Watson, Toronto; Secretary, Dr. Gordon Gallie, Toronto.

EYE, EAR, NOSE AND THROAT:—Chairman, Dr. F. C. Trebilcock, Toronto; Secretary, Dr. J. C. Calhoun, Toronto.

Every effort is being put forth to present a programme that will be of interest to all practitioners, and we trust that the members of the Association throughout the province will keep the above dates in mind and let nothing prevent them from attending the Victory meeting of our association.

The President of the Association is Dr. G. Stewart Cameron, of Peterborough, and the Secretary, Dr. T. C. Routley, Toronto.

KINGSTON AND FRONTENAC MEDICAL AND SURGICAL SOCIETY

THE regular meeting of the Society was held on February 10th, with the president, Dr. Boyce, in the chair.

1. Dr. Mylks showed an infant two months old with moderate cyanosis, tachycardia and a very distinct systolic bruit heard at the apex, but perhaps better at the 3rd and 4th left intercostal spaces, close to the sternum. The age excluded rheumatic endocarditis, and there was no evidence of a focus of pus anywhere. Dr. Mylks regarded the case as one of patent septum ventriculorum, largely, he said, because this condition is the most common of all congenital malformations of the heart.

2. Dr. Mathieson, for Dr. J. C. Connell, presented a case of syphilitic iritis. Early in January the patient had been awakened during the night by severe pain in both eyes. On admission to the hospital, he had well marked double iritis with synechiæ, hyperæmia, etc. There was a mucous patch at the base of the uvula and another on the right anterior pillar of the fauces; Wassermann positive. The iritis had cleared up under salvarsan, mercury and iodide. The case was presented to emphasize the fact that the causal organism in a rapidly developing double iritis is generally the spirochœta.

3. Dr. Quigley showed three cases of facial paralysis:

1. Private M., aged twenty-two, suffered a wound of the right mastoid in May, 1917. This was followed by a purulent discharge from the external auditory meatus. In May, his mastoid was opened and drained, but following the operation, facial paralysis developed. In September a nerve suture was done, the peripheral part of the facial being joined up with the spinal accessory. In December, the electrical responses were normal. The facial muscles are gradually returning to normal.

2. Private L. suffered an attack of dipthheria in November. In the following month the muscles of the left side of face became paralyzed. There was too, marked diminution of the field of vision in his left eye. In January, the paralysis extended to the muscles of the right side of the face. The electrical reactions were normal throughout. The palate was not paralyzed at any time. At present both facials are normal. It was pointed out in discussion that diphtheritic facial paralysis, even of a mild grade, is exceedingly rare.

3. Private L., aged thirty-five, awoke on the morning of August 10th, 1917, unable to move one side of his face. He saw double and experienced "loud explosive noises in his head". The diplopia has disappeared, and his hearing is good, but the facial paralysis persists. Electrical responses are both normal. While asleep his eyes are comfortably closed. During examination of his extra ocular muscles, the muscles of the upper lid follow the lower—functional paralysis.

4. Dr. Third showed a case of encephaloid carcinoma in the right breast of a male, aged forty-six, with involvement of the glands in axilla and posterior triangle of the neck on the same side. The nodule in the breast was not larger than a bean. The chief mass in the axilla about the size of a tangerine, while there were about twenty hard discrete nodules varying in size from a bean to a pea in the neck. The nodules were painless. The nodule in the breast was found only after a careful search. The blood picture excluded lymphatic leukæmia, while a physical examination of the chest and a negative Von Pirquet excluded tuberculosis. Hodgkins disease and carcinoma remained for consideration. Two of the nodules in the neck were excised and submitted to the pathologist, Dr. W. T. Connell, who reported encephaloid carcinoma. Subsequently, it was learned that an aunt about his own age is dying from cancer of breast.

Dr. Third read his paper, "Man's place in Nature," which appears in this issue.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. H. B. Small, Ottawa. President-elect—Dr. S. G. Grondin, Quebec. Acting Secretary-treasurer—Dr. J. W. Scane, 836 University Street, Montreal.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. D. J. Gibb Wishart. Secretary—Dr. J. H. Elliot, 11 Spadina Road. Treasurer—Dr. J. H. McConnell.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. G. A. Anderson, Calgary. Secretary-treasurer—Dr. A. Fisher, Calgary.
Annual Meeting, Calgary, 1919.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA—President—Dr. George E. DeWitt, Wolfville. Secretary—Dr. W. H. Hattie, Halifax.

BRANT COUNTY MEDICAL SOCIETY:—President—Dr. E. R. Secord, Brantford. Secretary—Dr. M. N. Faris.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. I. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

CALGARY MEDICAL ASSOCIATION—President—Dr. W. J. Shipley. Secretary—Dr. J. V. Follett. Treasurer—Dr. W. Hackey.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. A. Machado, Ottawa. Secretary—Dr. George D. Porter, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. M. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. J. W. Hattie, Halifax, Nova Scotia. Secretary—Dr. J. G. Fitzgerald, University of Toronto.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

DUFFERIN MEDICAL SOCIETY:—President—Dr. Rooney, Orangeville. Secretary—Dr. Smith, Shelburne.

EDMONTON ACADEMY OF MEDICINE:—President—Dr. J. A. McPherson. Secretary-treasurer—Dr. T. H. Prust. Library, Civic Block.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. F. F. McEwen, Aylmer. Secretary-treasurer—Dr. W. F. Cornett, St. Thomas.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

GUELPH MEDICAL ASSOCIATION:—President—A. T. Hobbs. Secretary—J. Lindsay.

HALDIMAND COUNTY MEDICAL ASSOCIATION:—President—Dr. Hopkins, Dunnville. Secretary—Dr. Courley, Cayuga, Ont.

HALIFAX MEDICAL SOCIETY:—President—Dr. John Cameron. Secretary-treasurer—Dr. Hugh Schwartz.

Medical Societies—*Continued*

HAMILTON MEDICAL SOCIETY:—President—Dr. R. Y. Parry. Corresponding Secretary—Dr. Fred Harper. Treasurer—Dr. T. W. Blanchard.

HURON MEDICAL ASSOCIATION:—President—Dr. Machell. Secretary—Dr. Hunter, Goderich, Ont.

KINGSTON AND FRONTENAC MEDICAL SOCIETY:—President—Dr. H. A. Boyce. Treasurer—Dr. H. E. Day, Secretary—Dr. W. T. Connell, Kingston.

LAMBTON COUNTY MEDICAL ASSOCIATION:—President—Dr. J. E. Kidd, Wyoming. Secretary-treasurer—Dr. A. R. McMillan, Sarnia.

LEEDS AND GRENVILLE MEDICAL SOCIETY:—President—Dr. Featherston, Prescott. Secretary-treasurer—Dr. G. C. Kidd, Brockville.

LONDON MEDICAL ASSOCIATION:—President—Dr. E. Spence. Secretary-treasurer—Dr. C. A. Harris.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. J. W. Smith, Liverpool. Secretary—Dr. L. T. W. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. G. D. Shortreed, Grandview. Secretary—Dr. Hugh MacKay, 220 McIntyre Blk., Winnipeg. Treasurer—T. Glen Hamilton, Winnipeg.

MEDICAL OFFICERS OF HEALTH FOR COUNTIES OF LINCOLN AND WELLAND:—President—Dr. King, St. Catharines. Secretary-treasurer—Dr. Howell, Welland.

MEDICAL SOCIETY OF NOVA SCOTIA:—President—S. H. Murphy, Halifax. Secretary-treasurer—Dr. J. R. Corston, Halifax. Annual Meeting, Antigonishe, 1919.

MEDICINE HAT MEDICAL SOCIETY:—President—Dr. W. H. Macdonald. Vice-President—Dr. C. E. Smyth. Secretary-treasurer—Dr. J. S. Macleod.

MIDDLESEX COUNTY MEDICAL ASSOCIATION:—President—Dr. A. S. Thompson, Strathroy, Ontario. Secretary-Treasurer—Dr. W. H. Woods, Mount Bridges, Ontario.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. G. Gordon Campbell. Acting Secretary and Treasurer—Dr. D. Grant Campbell.

MOOSE JAW MEDICAL SOCIETY:—President—Dr. J. M. Hourigan. Secretary-treasurer—Dr. J. Bloomer.

NEW BRUNSWICK MEDICAL SOCIETY:—President—Dr. G. G. Melvin, St. John. Corresponding Secretary—Dr. A. E. Macaulay, St. John. Treasurer—Dr. J. D. Lawson, St. Stephen.

Annual Meeting, St. Stephen, 2nd Friday in July, 1919.

NORTH-WESTERN MANITOBA MEDICAL ASSOCIATION:—President, Dr. F. A. Smith, Birtle. Secretary-treasurer—Dr. Tisdale, Kenton.

NORTH WATERLOO MEDICAL ASSOCIATION:—President—Dr. F. H. Kalbfleisch. Secretary—Dr. J. E. Hett, Kitchener. Treasurer—Dr. T. H. Callahan.

NIAGARA DISTRICT MEDICAL ASSOCIATION:—President—Dr. E. T. Kellam, Niagara Falls. Secretary—Dr. G. M. Davis, Welland.

NORTHUMBERLAND COUNTY MEDICAL SOCIETY:—President—Dr. McKenzie, Loggieville, N.S. Secretary-treasurer—Dr. Hayes, Nelson, N.S.

ONTARIO HEALTH OFFICERS' ASSOCIATION:—President—Dr. H. W. Hill. London, Ontario. Secretary—Dr. J. W. S. McCullough, Toronto.

ONTARIO MEDICAL ASSOCIATION:—President—Dr. G. Stewart Cameron, Peterborough. Treasurer—Dr. J. H. Elliott. General Secretary—Dr. T. C. Routley, 149 Close Ave. Assistant Secretary—Dr. F. C. Harrison, Toronto.

Medical Societies—*Continued*

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. A. T. Shillington. Secretary—Dr. J. A. Dobbie Treasurer—Dr. R. E. Valin.

OXFORD COUNTY MEDICAL ASSOCIATION:—President—Dr. J. M. Stevens, Woodstock. Secretary-Treasurer—Dr. G. M. Brodie, Woodstock, Ontario.

PERTH COUNTY MEDICAL ASSOCIATION:—President—Dr. P. F. Quinlan, Stratford. Secretary-treasurer—Dr. F. J. R. Forster, Stratford, Ontario.

PETERBOROUGH MEDICAL SOCIETY:—President—Dr. N. D. Buchanan, Secretary—Dr. G. Stewart Cameron. Treasurer—Dr. J. Malcolm McCulloch.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Dr. C. S. Elliott, Stellarton. Secretary—Dr. John Bell, New Glasgow.

PRINCE EDWARD ISLAND MEDICAL SOCIETY:—President—Dr. G. F. Dewar, Charlottetown. Secretary—Dr. Yeo, Charlottetown. Treasurer—Dr. W. J. MacMillan, Charlottetown.

REGINA MEDICAL SOCIETY:—President—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

ST. THOMAS MEDICAL ASSOCIATION:—President—Dr. G. A. Shannon. Secretary—R. W. Gliddon. Treasurer—C. R. MacKenzie.

SANITARY SERVICES OF THE PROVINCE OF QUEBEC:—President—Dr. A. Simard, Quebec. Secretary—Dr. J. A. Beaudouin, Lachine.

SASKATCHEWAN MEDICAL ASSOCIATION:—President—Dr. J. V. Cornell, Secretary—Dr. J. W. Turnbull, Regina.

SASKATCHEWAN ANTI-TUBERCULOSIS LEAGUE—President—Mr. A. B. Cook. Hon.-Secretary—Dr. M. M. Seymour, Commissioner of Health, Regina.

SASKATOON MEDICAL ASSOCIATION:—President — Dr. W. A. Cluff. Secretary—Dr. A F. Malloy.

SIMCOE COUNTY MEDICAL ASSOCIATION:—President—Dr. T. J. Johnston, Midland. Secretary-treasurer—Dr. H. T. Arnall, Barrie.

SOCIÉTÉ MÉDICALE DE MONTRÉAL:—President—M. B. G. Bourgeois, Secretary—H. M. Aubry, 323 Sherbrooke Street East, Montreal.

SOCIÉTÉ MÉDICALE DU DISTRICT D'OTTAWA:—President—Dr. M. Aubry. Secretary—Dr. M. J. E. D'Amour, Papineauville.

SOCIÉTÉ MÉDICALE DE QUÉBEC:—President—Dr. M. Savard. Secretary—Dr. M. Couillard, Quebec.

SOCIÉTÉ MÉDICALE DE TROIS-RIVIÈRES:—President—Dr. M. Deblois. Secretary—Dr. O. Darche.

SWIFT CURRENT DISTRICT MEDICAL ASSOCIATION:—President—Dr. Graham. Secretary-treasurer—Dr. Hughes.

THUNDER BAY MEDICAL SOCIETY:—President—Dr. E. B. Oliver, Fort William. Secretary-treasurer—Dr. J. G. Hunt, Port Arthur.

TWIN CITY MEDICAL ASSOCIATION:—President—Dr. W. L. Hilliard. Secretary—Dr. J. E. Hett, Kitchener, Ont. Assistant Secretary—Dr. G. E. Chapman.

VALLEY MEDICAL SOCIETY:—President—Dr. M. E. Armstrong, Bridgetown. Secretary—Dr. T. M. MacKinnon, Berwick, N.S.

VANCOUVER MEDICAL ASSOCIATION:—President—Dr. J. W. Ford. Vice-President—Dr. G. B. Murphy. Secretary—Dr. A. V. Webster.

WEST ELGIN MEDICAL SOCIETY:—President—Dr. D. A. Cameron, Dutton. Secretary-treasurer—Dr. D. J. Galbraith, Dutton.

WINNIPEG MEDICAL SOCIETY:—President—Dr. J. E. Lehmann. Treasurer—Dr. A. W. Allum Secretary—Dr. G. S. Fahrni, 507 Boyd Bldg

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"THE POLICY OF THE OSTRICH"

By Colonel J. G. Adami, M.D., F.R.S., C.A.M.C.

ON New Year's Day I was sitting after lunch over coffee and cigarettes with an old friend, in London for the war, who before he joined up, enlivened his work as lawyer and financial adviser with an occasional incursion into literature. The afternoon he told me was his: the government department which had been so fortunate to secure his services was being demobilized. Asking him what he proposed to do next—"I am thinking," he said, "of retiring to some quiet spot and putting together a collection of essays upon the 'Dead Hand'. Returning to the old country after all these years, more and more each day there is being borne in upon me the extent to which the Dead Hand of tradition and customary point of view presses upon society and represses logical and needed advance in every direction." And forthwith he launched upon a succession of modern instances.

I could not wholly follow him when he touched upon sexual relationships: with him I had to admit that physiologically the human male is intended to be polygamous, whereas the social code demands that he be monogamous. But his deduction that therefore the social code was wrong, and that we should acknowledge and admit polygamy, failed, as I pointed out to him, to take into consideration the fact that the family constitutes the unit of society, our whole social and moral code being erected upon that foundation. Polygamy, I continued, has in the past been tried and found wanting, and to-day the Mahommedan nations, which give a legal sanction to polygamy, are nevertheless in general reverting to

Being the opening paper of a discussion upon the 'Prevention and Arrest of Venereal Disease in the Army," held at the Royal Institute of Public Health, on January 8th, 1919.

monogamy: the social environment of man to-day appears to demand that he be the husband of one wife. The real difficulty lay, not in society, but in the fact that man has not yet become physiologically adapted to his social state: the good of the family indicates one course of conduct, man's constitution impels to another. It is an evidence of progress that, as a community, we place the benefit of the family before the desires and comfort of the individual; but doing this we find ourselves in the dilemma that the performance of physiological function, save under the ægis of monogamic marriage, becomes regarded as anti-social, and an act which the individual in his heart of hearts knows to be in itself natural and desirable has to be regarded and taught as contrary to good morals. We find ourselves indeed torn asunder between Peter and Paul, the Peter that is within us teaching us that what God has given us is clean and to be enjoyed, the Paul that woman is a snare, and that even a bishop should have but one wife—and scarcely that. And as youth is largely irresponsible and the sense of social duty is a plant of slow growth, which in some is throughout life choked by the weeds of personal predilection, it has followed that the whole matter of sexual conduct has for generations been surrounded with an atmosphere of insincerity, not to say, hypocrisy.

We give lip service to public duty; the majority of us strive to uphold the social law, but I imagine that even the best of us, be it in thought, word or deed, cannot as men wholly throughout our lives escape from the dominance of our natural passions—that is, if we are real men, healthy and virile. It is the instinct of this insincerity, which in the past has permeated the whole treatment of the matter, that makes it so difficult for most of us to take up the public discussion. In its incapacity to reconcile the physiological and the moral aspects of the subject, the British public and its leaders have sought the solution of silence, of proceeding as though the problem did not exist; they have written themselves down—ostriches. Here it is that the Dead Hand comes in; the Dead Hand of a training begun in early childhood whereby we have been taught to regard the open discussion of sexual matters as "taboo"; the Dead Hand of schoolboy "form" according to which public acknowledgment of one's standing in relationship to moral matters, save on the part of those who have donned the cloth and become professional moralists, brands one as either a prig or a humbug. Happily we are passing out of this phase. The Royal Commission in the first place, and the forcible and courageous pronouncement regarding syphilis on the part of the *Times* in its

leading article of January 4th, heralds the ending of the old regime of silence, concealment and taboo. What this policy, this submission to the Dead Hand of custom has cost the army and the country during the last four years is awful to contemplate. For our salvation as a nation and an empire we have needed the services of every available man; have needed them at the height of their physical capacity. Time and again during the last four years, owing to our want of man power, it has seemed that the greater concentration of the enemy forces must result in a break through our lines, and bring ruin to us. Even without such a break, our losses in man power have been huge, and to-day it is the A1 men who have survived whom we most need still as A1 men, to be the fathers of sound and fertile families if the country is to maintain its ascendancy in industry and influence; those men we, as a nation, need sound, and not infected.

But what has actually happened? Year by year before the war, the annual report of the Director-General warned the government as to the prevalence of venereal disease in the army; a quarter of all admissions to hospital was due to this; no other condition in peace time competed with the venereal diseases in lowering the efficiency of our soldiers, and it was a commonplace of military knowledge that in war time the prevalence and the loss of efficiency from this cause had in the past undergone a rapid increase. Lord Kitchener, it is true, in a notable communication addressed to the soldiers of the little old army, asked them to respect the womankind of our Allies overseas, but not a step was taken to protect our men at home. With camps being created all over the country, no steps were taken to render the regulations against harlotry more rigid. Our men have throughout the war been in venereal hospitals, not by companies, but by battalions. Each case has meant two months or so on the sick list, and weeks and months before the individual has been restored to full vigour at the front, if indeed there has not been a legacy of rheumatism, eye disease or enfeebled general health.

The policy of the ostrich was maintained. Before the war the government had appointed a Royal Commission upon venereal disease, and having done this, appeared to think that it had more than done its duty. Do not misunderstand me; the National Council for Combating Venereal Diseases accomplished a notable work in strengthening the hands of the Royal Commission. The Commission itself performed a service of the first order, and the government did well in acting immediately upon its report; but

the report and the act did not contemplate war conditions and the soldier. This I know, that when in the autumn of 1914 the First Canadian Contingent arrived upon Salisbury Plain, it very rapidly found that the Common Law of England and the Military Law were equally impotent to cope with the condition of affairs revealed. Here again do not misunderstand me. I do not mean to suggest that whatever the good women at home may have thought regarding the virtue of their sons and the vice of the British harlot, the Canadian soldier was neither better nor worse than the British or the Australian, or the New Zealand soldier. Let me be perfectly frank. We have as a matter of fact discovered that of the cases of venereal disease among Canadian soldiers admitted to hospital in England at a time when periodically new drafts were being received from across the Atlantic, as high a proportion as twenty-five per cent. of all admissions were of active infections acquired in Canada—were admissions from the new drafts. But what I mean is that the heads of the Canadian service here in England were responsible to the Canadian people for preserving the health of their men. They were responsible to the mothers of Canada. To their surprise they found that harlotry in England is a protected profession, but not a controlled. Here again do not misunderstand me. To a large extent the same is true of Canada; there also the policy of the ostrich has prevailed, and the police have tacitly sanctioned the traffic. But things are altering. Only recently the Commission upon Conservation has published a report upon venereal disease in Toronto, and the Committee of Sixteen another upon vice in Montreal, and these have profoundly stirred the people. But in England in war time, I confess that the Canadian authorities expected immediate and willing help from the local and London authorities in protecting the soldier, and help there was none. Each week end there poured into Salisbury from London from eighty to one hundred loose women. The railway company was impotent to prevent their journeying; the police at Salisbury could not turn them out of the town; the Wiltshire magistrates could or would do nothing; at most, the military police could declare houses of ill-fame within the camp area out of bounds, and turn women out of the camps proper. It took the better part of two years before the government utilized the powers granted by the Defence of the Realm Act, and in 1916 for one special military area where there had been a large outbreak of venereal disease, empowered the competent naval or military authority to transport out of the area those directly or indirectly concerned in

the profession of prostitution. In the meantime all that that most admirable association, the National Council for Combating Venereal Disease could suggest as an antidote was talk: the provision of lectures and the instruction of the soldier—this along with the provision of opportunities for recreation. I believe that I am correct in saying that it took them the better part of three years before they openly recommended their lecturers to advise early preventive treatment after the act, so heavily did the Dead Hand of Mrs. Grundy press upon them.

I shall never forget my attendance along with my chief at a meeting of that society in 1916. Perhaps some of you have heard the story of how, in the early part of last century, grave accounts reached Edinburgh regarding the drunkenness of the further Highlands, and of how the General Assembly determined that it was their duty to send north a missionary to preach temperance, and the missionary went and in due time returned and appeared before the Assembly. Said he, "I have had gran' success." Said the Moderator, "What mean you by gran' success?" "Weel," replied the missionary, "ye must know that I found the seetuation simply awfu', but I wrestled with the puir misguidit folk and as a result of ma meenistrations they have sworn to ameliorate their habits, and no' to tak' mair than one dram of whisky before breakfast the morn."

The worthy chairman at this meeting, now no longer with us, told in all seriousness the anxiety and trouble that one of the great Canadian camps of 40,000 soldiers and more in the south of England had given the council; how they had wrestled with the difficulty; how they had wanted to put the Defence of the Realm Act into force, but feared that action against their frailer sisters would rouse the suffragettes into militancy; how for months they had appealed to the mayor and town council of the nearby town to take action, but without success, until now, when he had the glad news to impart that finally they had prevailed upon the borough magnates and a new era was opening; the mayor and council had consented to appoint two women policemen! Two women policemen to protect the morals of an army of 40,000 men by influencing for good the harpies that preyed upon them!

Nor shall I forget the just impatience of my chief on that occasion, and how he fluttered the serenity of that meeting; how he put it to the council that here in the greatest of world wars, dealing with the greatest of army plagues, for the last two years they had been nibbling at the fringe of the subject, talking and talking but

accomplishing nothing fundamental. How London is the great centre of prostitution, the hot-bed of venereal infection for both officers and men of other ranks on leave. But the council proceeded as though London conditions did not exist; how at that moment, but a few yards away from the meeting, enter one of the music halls and they would find the promenade packed with prostitutes, openly soliciting. Whether his words had the effect I cannot say, but within a week the public-spirited manager of the Empire announced that his promenade henceforth would be closed to women, and the other music halls followed suit.

Now I am convinced that this policy of frank dealing and open speaking is the only one that will improve conditions. Thus had the medical profession and the national council, and the government spoken out at the beginning of the war, the well-being and happiness of the country and the condition of our troops would to-day have been very different from what it is. Even at this late date I would beg the national council to influence the government to publish a statement regarding the venereal situation in the army in successive years of the war, in the different regions—at home, in France, Mesopotamia, and the like, so that the country may know the extent of the trouble as it affects the army, and, simultaneously, to obtain powers to make an investigation in selected areas or classes of the population into the frequency of either syphilis or venereal diseases in general in those areas or classes. Let the situation be known and faced. I am convinced that the upholders of the policy of bated breath, the ostrich policy, once they begin to think over the matter, recognize the unreasonableness of their attitude, and that their opposition is not to be feared, even by the politician anxious for votes. Of this I am convinced from experience. For notice—Mrs. Grundy and the prudes are far more in evidence in the United States than in this country. We, for example, have never condescended to speak of "roosters" or thought it improper to mention the lower extremities by their Anglo-Saxon name, or to drape the anterior continuations of the piano. But this notwithstanding, the Surgeon-General at Washington did not hesitate in 1912, before the war began, to publish in his routine orders outspoken regulations directing all soldiers returning to camp to state whether they had exposed themselves to the possibility of venereal infection, and detailing the preventive treatment to be given to those who had been exposed. I may say that I studied the American treatment at Washington in the spring of 1915 and reported upon it to the War Office, but the Dead

Hand prevented its adoption for close upon two years. Yet if this could be accomplished in the States in times of peace, we in this country need not have feared to adopt it in time of war.

When in 1917 the States actually came into the war, the whole country took up the matter. The Secretary of the Navy, for example, did not hesitate to announce "To-day as never before American manhood must be clean and fit. America stands in need of every ounce of her strength. We must cut out the cancer of disease if we would live." The Secretary of the Army was equally direct. General Pershing, as Commander-in-Chief, has made it one of his army regulations that the venereal status of a unit shall be filed with the other papers of the officer commanding each unit, and shall be taken into account in determining the promotion of the officer. To quote Major Haggard, president of the Southern Surgical Association, "The inevitable pestilence is being fought with every imaginable agency—education, recreation, diversion, protection, isolation, prophylaxis, penalties and court-martial. Many thousands of young men will for the first time be taught the whole truth by all sorts of real men. . . . After the war, the idea will permeate all strata of society, and be a real understandable and liveable benefaction. It will disseminate through America the practice of personal hygiene by uncounted numbers of young men. The beneficial results to accrue to us and to posterity will almost make the war worth while." But Colonel Hugh Young of the United States Army is with us, the well-known head of the genito-urinary department at John Hopkins Hospital, America's foremost authority on venereal disease, and with him Lieutenant-Colonel W. F. Snow, who is largely responsible for the administration of anti-venereal measures overseas. They will put before us what has been accomplished and how. Thanks to Colonel Waley, liaison officer at the War Office, and with the permission of the Commander-in-Chief of the United States forces, they have come from France to attend this conference.

With their important communication in view, I will be brief regarding the methods in vogue in the overseas military forces of Canada. I have already indicated the difficulties in our way due to want of active co-operation on the part of the civil authorities in Great Britain. In practice we have found that *there is no one procedure which is effective in arresting venereal disease in the army; it is necessary to employ a combination.* General Foster, the Director-General, has put into force all the methods save one (court-martial) mentioned by Major Haggard—education, warning, recreation,

diversion, protection, isolation, prophylaxis and penalties. Let me indicate the main points of our activities. One of our leading Canadian hygienists, Colonel Amyot, professor of hygiene in the University of Toronto, has been attached by the Director-General to his office and given special charge of the venereal situation, with a keen worker under him, Captain Gibbs, C.A.M.C., whose whole time is devoted to investigation and propaganda work.

1. *Inspection.* Emergency inspections are held once every week. By emergency is meant that they are held without previous notice.

2. *Education.* On joining up, on arrival in England, and periodically throughout his service, the soldier is instructed regarding personal hygiene, the need to the nation of personal efficiency, the value of continence, the dangers to himself, to his future family, to those around him, of venereal infection; the mode of infection; the nature of gonorrhœa, syphilis and chancroid, and their results. That the instruction may be given in proper form, and nothing essential be overlooked, a syllabus of five lectures on the prevention of communicable disease has been issued from the office of the D.G.M.S. to every medical officer of units in England, the course to be delivered to officers, non-commissioned officers and men in definite groups each week until the course is finished. The men are instructed straightly that intercourse with the other sex is not essential to health, that for a man to expose himself to the danger of venereal infection and become infected is knowingly to acquire a self-inflicted wound which, as much as any other self-inflicted wound, should render him liable to court-martial. If despite these warnings, the temptation to intercourse is too great, then for the good of the service, it is his duty to protect himself so far as this is possible. He is instructed how this may be done, nay more, is told that in their own interests and his, the army authorities provide him gratis with calomel ointment for prophylactic use, and lastly, he is instructed to report for treatment as soon as possible after the act.

3. *Early treatment.* Every Canadian orderly medical room in England is an early treatment centre open night and day; there is present a trained non-commissioned officer to supervise and see that the soldier carries out fully the instructions given. Those instructions, in clear language and clear type, are set forth on the walls. When one of the trained non-commissioned officers seeks, or is given, transfer to other duties, his successor is appointed a week in advance, so that before taking over the duties he may be

thoroughly informed. For those on leave in London, there are open day and night two early treatment centres, at Southampton Street and at Victoria. For these exposed another treatment is given on their return to their units. Men are further instructed that if not in the neighbourhood of a Canadian centre, they are to go to an Australian or New Zealand centre. As a matter of fact, the Dominions are working together and are appointing centres in the large cities of the United Kingdon open to men from all the Dominions. In Paris also is a Canadian centre open to soldiers from all parts of the Empire on leave in that city.

Here it deserves note that, contrary to the optimistic, and I hold dangerous, statement contained in the leading article of Saturday's *Times*, the Canadian authorities in their talks to the men on parade make a point of emphasising that *neither prophylactic nor early treatment assures absolute immunity to venereal infection*. The men are warned that this is not the case, the experience has shown that even under expert supervision neither the one nor the other procedure is free from occasional failure. In this connection the Canadian authorities are at one with Mr. E. B. Turner in his letter to the *British Medical Journal*, January 4th. They firmly believe that if the army—and the populace in general—be advised that absolute deterrents exist when this is not the case, there is a possible danger of their employment leading not to dimunution, but positive increase in the spread of venereal diseases. This, I understand, has actually happened in Germany. We have, it is true, no official statistics to bring forward in the matter, because for the good of the service and to encourage the men to apply for treatment at the orderly room, no names are taken.

Penalties. By an Order-in-Council issued in 1916 the Governor-General directed that half the pay of soldiers found suffering from acute venereal disease should be docked, so long as they remained on the sick list, and this is strictly observed, during convalescence the men are given fatigue duties. And to this the venereal record is inserted on the medical history sheet, and accompanies the man throughout his army career, and is brought before the Pension Commissioners.

4. *Treatment.* This is not a medical lecture, so I shall not enter into the details of the treatment given at our two Canadian special venereal hospitals, full of interest as they are for the expert. I would only point out that at both of these hospitals from the first possible moment the men, instead of being treated as being in Coventry and as depraved characters, are treated as human beings.

I have it from one of our chaplains that as a body he found them the best and brightest and most attractive lot of fellows he had come across in the army, and that he treated them as such. As part of their treatment they are kept diverted, football, baseball, and other teams, are a feature of the camps, and there is keen rivalry between the teams from the different wards. Contrary to the generally accepted view that acute gonorrhœa is best treated by avoidance of exercise, the experience of the special hospital at Witley Camp has shown that physical training, by keeping the men busy and diverted, very materially shortens the period of hospitalization. The effects obtained were so good that in the report of his inspection, Major-General F. Howard, Inspector of Infantry, recommended to the Commander-in-Chief that the Witley methods be employed at all military venereal hospitals, as tending so greatly towards military efficiency and saving so much time in training.

Results. Lastly as to the results. I will only trouble you with one set of statistics, but that, I think, shows eloquently the effect of the campaign undertaken by the Director-General through Lieutenant-Colonel Amyot and his staff:

During the month of September, 1916, from nearly 42,000 Canadian troops in Great Britain there were admitted to hospital suffering from venereal disease nine hundred and sixty cases, practically a battalion; during the month of September, 1918, from among 110,000 Canadians in Great Britain, there were seven hundred and fifty similar admissions. In two years the venereal incidence had been reduced more than 66 per cent. It stands now at less than the third of what it did two years ago. Had they continued at the same rate the admissions during the month in September, 1918, would have been not seven hundred and fifty but over two thousand, five hundred; not seven and a half companies, but two battalions and a half out of action.

Inevitably during this period of armistice with beginning demobilization, we are dreading a more serious and sinister increase in venereal disease throughout the country, as the result of the return of the soldier; dreading its effect upon the family. I know that the agitation has already begun in Canada; that there it has been urged that no soldier suffering from gonorrhœa or from syphilis shall be permitted to return to the Dominion, but that such shall be kept here in England in hospital until wholly cured—an impossible recommendation, seeing that cases of chronic gleet and some cases of tertiary syphilis so far fail to react to any known form or

treatment. What is suggested, therefore, is that a certain percentage of Canadian soldiers be kept in hospital in England for the rest of their natural lives.

It is not the civil population that has to fear the soldier, but the soldier the civil population. Throughout the war the soldier has been well cared for, all means have been employed to diagnose venereal disease at its very onset, and to give hospital treatment immediately. It is then that disease is most easily controlled. Every soldier has been warned time and again of the dangers he runs, has been instructed as to personal hygiene, and has been afforded early treatment under supervision. As a result there is no section of the community which at the present time is in a cleaner and healthier state: no section of the community which has less venereal disease. I speak here for the whole body of the Imperial forces. As for our Canadian experience, I may say that this autumn the instruction was given that all soldiers returning to Canada whose medical history sheets bore the record of venereal disease should be given the Wassermann test. I have the August figures, showing that 2 per cent. of the total number returning reacted, and all these were tertiary, non-infectious cases, for no active primary or secondary cases are permitted to return. The average number of reactions in the civil population is estimated at from 8 to 12 per cent. There is four to six times as much syphilis in the civil population as in the army. But in the meantime nothing of any moment has been accomplished for the civil population. Lord Sydenham in his letter to the *Times* of January 7th speaks of the provision of early treatment centres. "We are endeavouring," he says, "to secure the organization of clinics continuously available where early treatment by competent persons can be obtained." But they are not available to-day; they will not at the present rate be available until demobilization—and demoralization—have become a matter of history. To meet the situation they should be scattered thickly all over the country. A man must not have to take a two hours' journey after the act; he certainly will not take it. The dearth of expert syphilologists and of bacteriologists qualified to carry out the delicate Wassermann and other complement fixation tests demands that the centres for ordinary venereal diagnosis and treatment under the Act be few and far between, situated in the great centres of population. It is thus the civil population that to-day constitute the grave danger.

And all these four years nothing has been done to meet the emergency. When our soldiers return and are feasted and made

drunk and solicited and fall, there will be no medical orderly room to proceed to, no provision of early treatment, no non-commissioned officer to see that the elaborate toilet is duly performed. Provision for early treatment will be non-existent. The preventive treatment favoured by Lord Sydenham would at very best be applicable to a fraction only of the population.

Let me repeat the soldier will receive and not give, and, speaking as a soldier and for the soldier with full recognition of the strength and the seriousness of the argument put forward by Mr. Turner and Lord Sydenham, and admitting that the provision of prophylactic treatment to an uninstructed public may well result in the spread rather than the reduction of venereal disease. I am strongly of opinion that the soldier before demobilization should be provided with the means of prophylactic treatment, should be advised where and how to obtain tubes without difficulty, and, moreover, be given precise detailed instructions as to the method of employment. For the good of the country I see no other possible course.

I have spoken frankly. I have here taken a position that on first consideration may not receive the unqualified support of those others who, like myself, realize the vast harm done to the manhood and womanhood of our people, the hideous heritage of disease to this and coming generations—where indeed there does not result sterility or the dead or diseased untimely fruit of the womb—the appalling loss of man power that result from the present state of affairs. But to those who, in the supposed interest of morality would still maintain the policy of silence and would accuse me of propounding an unmoral, if not immoral, policy, I would only repeat what I said in Westminster in July to the National Conference upon Maternal and Infant Welfare:—"Which is the more immoral act: to advise a man how to prevent infection if he has transgressed the moral code, or calmly and coldly to look on without moving a finger while, through ignorance on his part, the innocent wife and children are made diseased, and they and the community suffer through generations?"

And as to this vital problem of the provision of prophylactic or early treatment respectively, which to-day is so stirring us, I cannot recognize any logical intermediary position between regarding as a leper outside the pale of society, the man or the woman who has become infected, and approving of treatment before the act. We cannot take the first position and decide that as the man makes his bed so he must lie upon it, and that because his wife also occupies the bed, and she must be protected. But if we,

therefore, are compelled to treat the disease, the earlier we treat it the surer we are of controlling it. Infection is present from the moment the infecting agents begin their action upon the tissues. It is ridiculous to wait until they have set up lesions recognizable to the naked eye. If it is justifiable to treat the developed disease, it is yet more to afford early treatment; and, if that, then, for security, to make it the rule that after every illicit intercourse the man seeks protection. To direct, as did certain memorable Dead Hand instructions, that preventive treatment must be given in the presence of a bacteriologist after the gonococcus or the spirochætes have been found actually present upon the organs of generation and recognized under the microscope, is what across the Atlantic is termed "eye wash". And if, as the writer to the *Times* on New Year's Day put it, the critical hour is 11 p.m., and treatment may justifiably be given at 11.15, what objections can be raised to giving it at 10.45? The doctrine that "the sinner must not prepare for immorality, but he may use the best means known to science to escape the consequences"—such a doctrine surely, if not hypercritical, is hypocritical.

But we are not a logical people, and the probabilities are that we will end in some illogical compromise. Yet, unless something be done, and that immediately, the next few months will see such a spread of venereal disease in this country that for generations the Empire will suffer. Now if ever it is well to repeat His Majesty's famous exhortation, "Wake up, England!"

Princess Arthur has given over three years of continuous service as a V. A. in a military ward of a hospital, and is now giving all her time to nursing the babies in Queen Charlotte's Lying-in Hospital in Marylebone Road. Night and day the Princess takes her turn at the regular work. Every year over two thousand patients are received at this famous hospital which has been under the patronage of a queen ever since the time of Queen Charlotte in 1810. At present both Queen Mary and Queen Alexandra are patronesses. Since war was declared over five thousand wives of soldiers and sailors have been attended, including the wives of many colonial soldiers. In addition, Belgians and other refugees have received every kindness.

SIMPLE GOITRE

By Malcolm H. V. Cameron, M.B.

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THE thyroid gland is an organ universally found among vertebrates. Its embryology and physiology are fascinating subjects upon which many papers have been written, its anatomy is interesting and its pathology is of such extent that I cannot hope to cover it in the time at my disposal.

The development of the thyroid is from the cylindrical cells of the thyroglossus duct, according to Crotti, who dismisses the theory of numerous anlagen offered by Piersol. Gaskell has an observation that in certain vertebrates the thyroglossus duct persists as such and opens into the genital tract. The analogue of the thyroid in these cases being, evidently, a sex gland.

Late in fœtal life the thyroid has changed its character so that it is a mass of undifferentiated cells which, shortly before birth, pass into the well-known structure of the normal gland.

The mention of these few points is made in explanation of the persistence of masses of undifferentiated cells growing in a thyroid and constituting fœtal adenomata and of the finding of accessory thyroids in various locations in the body.

The general points in the physiology of the thyroid are matters of common knowledge. In 1914, this section was privileged to hear Professor Hertoghe, of Antwerp, in an address on hypothyroidism. In that address he taught us many symptom syndromes that were made to respond to thyroid feeding. The effect of thyroidectomy in Grave's disease prove the converse of these conclusions in hyperthyroidism. The conclusions of Plummer point to a most astonishing influence of the thyroid upon metabolism. He refers to the two secretions of the gland as colloid and a hormone which is identical with the crystalline Alpha-iodin compound of Kendall, and states that: "The rate of metabolism is dependent on the thyroid hormone, that this function is not specific but is common to all the tissues of the organism." Kendall published the discovery of his Alpha-

Read before the Academy of Medicine, Toronto, December 17th, 1918.

iodin compound in 1914, and after a repetition of his experiments consuming some fourteen months, published another paper in 1916. In this latter paper he describes the function of the thyroid as the elaborator of a catalyzer, the Alpha-iodine compound, which regulates the rate of deaminization of the amino-acids and as the regulator which gives to each cell its adequate supply of this catalyzer momentarily, the colloid functionating as the vehicle of reserve. He also suggests that the function of the parathyroids is to convert ammonium carbonate into urea and that therefore the urea-ammonia output is a measure of thyroid-parathyroid activity.

Any enlargement of the thyroid gland may be called a goitre, whether due primarily to an increase in the number of acini (adenomatosis), in the size of the acinous cells (hypertrophy) in the number of cells per acinus (hyperplasia), or in the interacinous content. The causes of these enlargements are so numerous that with the definition must go a classification of goitres.

A classification on purely embryological grounds, such as is offered by de Quervain, is scientific, but it is of more academic than clinical interest as, from the latter standpoint, it is confusing.

MacCallum simplifies the classification by describing only two forms, the colloid and the adenomatous, with the latter subdivided into several other forms depending upon changes in the adenoma.

Edmunds, in Chocye's system of surgery, divides goitres into seven classes with several sub classes.

Crotti, with apologies for its deficiencies, offers a clinical classification which is, at the same time, sound and complete in its pathology. In this all goitres are divided into benign tumours, malignant tumours, and tumours of inflammatory origin.

The benign tumours are:

I. Parenchymatous goitre:
    1. Physiological (puberty, pregnancy, etc.).
    2. Non-toxic.
    3. Toxic.

II. Colloid (cysts, fibrous, calcareous and osseous).

III. Fœtal adenomata.

The malignant tumours are:

1. Epithelial tumours with seven subclasses.
2. Connective tissue tumours, with six subclasses.
3. Mixed tumours, with five subclasses.
4. Dermoids.
5. Accessory thyroids.

Inflammations:

I. Bacterial:
   1. Acute (non-purulent, purulent).
   2. Chronic (syphilitic, tubercular and woody thyroiditis).

II. Toxic.

III. Parasitic—Chagas's chizotrypanum cruzi and echinococcus.

Parenchymatous goitre is characterized by an increase of all the glandular elements of the thyroid. There may be an increase in colloid. There is an increase in iodin content. In its simplest form it is "the hyperplasia for physiological reasons", described by Edmunds. The increased demand for the secretion induced by the strain of puberty or pregnancy is met by this increase in glandular elements, and, lest it pass on to hypertrophy which characterizes the non-toxic form of parenchymatous goitre, it becomes necessary to spare the thyroid by feeding thyroid extract or by administering iodine in some form, preferably and ideally the new Alpha-iodin compound of Kendall. The toxic form will be discussed at length in the paper that is to follow.

Colloid goitre is due to an excess production of colloid which is described as a spongy material which aids in the storage of iodin compound or, as it is termed by Kendall, "a vehicle of reserve" for the hormone of the gland. The excess production of this material, under undue stimulation to hormone elaboration when metabolism is speeded up from one cause or another, may, after the stimulus is removed, leave a mass of colloid which is not absorbed and so be the beginning of a simple colloid goitre, a suggestion made by C. H. Mayo in a paper read in May, 1914. This form of goitre is then characterized by a great increase in colloid material and by a decrease in iodin content. The secreting cells are flattened by pressure and the blood supply to the essential glandular elements is lessened. It may develop into cystic, fibrous, vascular or calcareous goitres, forms whose names are self-explanatory.

Fœtal adenomata are rests of the masses of undifferentiated cells which are intermediate between the clyindrical cells of the thyroglossus duct and the typical cells of the normal thyroid gland. These take on growth and are commonly noted at puberty. They are usually non-toxic in character.

Malignant tumours of the thyroid are important, especially in that it is most necessary to differentiate them from benign

goitres at a stage in which operation may give some hope of cure. I have been able to locate two of these among the cases in which I assisted Dr. Silverthorn during the past ten years. I have not encountered any in my own service during the past five years.

Inflammations in the thyroid are bacterial, toxic, or parasitic. Their consequences may vary according as the process occurs in a normal gland or in a goitre. In the past ten years there have been, in the services mentioned, two acute abscesses occurring in normal thyroids. Both were successfully opened. These inflammations are always secondary and, as metastases of every kind are less frequent in the thyroid than in any other tissue, they are not common.

The parasitic forms are most interesting in that Chagas, of Rio de Janeiro, described in 1907, a parasite which he named schizotypanum cruzi. This parasite is transmitted by an hæmatophagus insect, and an inflammation of the thyroid, which is very frequently fatal, develops rapidly. Hydatids are rare and are never diagnosed before operation.

The clinical symptoms of simple goitre are systemic disturbances, such as slight thickening of the skin, constipation, apathy, etc., or slight tachycardia, impatience, brilliance of the eyes, nightmares, nervousness, etc. In every goitre there must be a transition stage before the definite symptoms of a degeneration leading to hypothyroidism or to the onset of a toxic condition. The consideration of this fact may lead to an explanation of such phenomena as the "goitre heart". The cause of death in this condition may be a complex mechanism of pressures, resulting in damage to heart muscle, or a series of toxic processes that act within limits that do not result in recognizable symptom syndromes. Some of the symptoms that characterize the onset of the menopause may result from an imbalance in the production and demand for thyroid secretion.

Mechanical symptoms may be present as dyspnœa, from pressure upon the trachea, cough from pressure upon the recurrent laryngeal nerves, and venous congestion. Dysphagia may result from intra-thoracic goitre. This latter form may be quite intrathoracic, having developed from an accessory gland or having gone down from the neck by force of gravity, or it may be of the plunging type. The *x*-ray may be of great assistance in diagnosing this cause of dysphagia.

The ætiology of goitre is still an unsolved question. Crotti gives a résumé of three hundred and forty-eight authors, and I

have found one at least that he has not mentioned. There is considerable evidence to show that heredity plays a part, particularly in the production of cretins. Just as tuberculosis establishes itself with greater facility in predisposed families, so does goitre or cretinism in a goiterous family.

Goitre in the mother has a greater influence than goitre in the father. Sanitary conditions have an undoubted influence. McCarrison's experiments on fish and sheep show conclusively that filthy living conditions tend to goitre formation. Auto-intoxication has its advocate in Messerli who, in 1915, published certain cures of goitres by disinfection of the intestinal tract. Contagion by contact is not well proven.

All of these theories have their advocates, but the most generally accepted and best proven ætiological factor in the production of endemic goitre is water. When we come to inquire into what is in the water, we uncover a great mass of research. The occurrences of so-called "goitre-belts" is generally accepted but variously explained. In 1883, Bircher concluded that goitre occurred only upon marine deposits and especially upon marine sediments of the paleozoic, triassic and tertiary periods, and that the eruptive rocks, the crystalline rocks of the Archæan groups, the sediments of the Jurassic, Cretaceous and Quaternary seas and all fresh water deposits are free from goitre.

(This summary is quoted from Crotti.)

I endeavoured to confirm this observation, in a measure, as it applies to this locality by inquiring into the geological formation of the rock about Kingston, Ont., which is in the midst of one of these goitre-belts. The limestone there is of the origin noted by Bircher, according to a report issued by the Ontario Bureau of Mines on the geology of Kingston and vicinity written by M. B. Baker in 1916.

If the source of the water be from a marine deposit as stated, or from eruptive sources which give the so-called hypogenic or plutonic radio-active water, as Repin assumes, the guilty content of the water is still to be explained.

There are many theories as to this content. It is described as a colloid substance, removable from goiteriginous water by dialysis, killed by boiling, by treatment with zinc hydrate or hydrogen peroxide. It is described as a radio-active body derived from the plutonic origin of the waters concerned, and it is held to be an infection. How an infection has persisted from the paleozoic age until the present surely demands proof. Another theory is that a

characteristic of goiteriginous water is a content of fluorides. This was advanced in a paper published in the report of the French Academy of Sciences in 1917. Mr. Lancaster of the Provincial Laboratory of Metallurgy undertook to work over these experiments, using waters from Ontario. This task was interrupted, but may yet be undertaken. Should there be a causative association between fluorides and goitre discovered, it will probably be found to depend upon the simple fact in inorganic chemistry that fluorin displaces iodin from its combinations.

Other ætiological factors general to goitres are circulatory disturbances, abnormal nervous stimulations, and absence of iodin in food. Forbes and his fellow-workers published a report upon the iodin content of foodstuffs generally used in various parts of the United States. They found that in goiterous regions the food was not less rich in iodin than in others. Marine, quoted by Crotti, says that twenty years ago, the sheep industry of Michigan received a serious setback because of the number of cretin lambs born. Iodized salt improved the situation. Plummer states the position of iodin in food as a factor in the causation of goitre in succinct form as follows: "Lack of available iodin and strong coincident stimulation may be one of the factors in producing hyperplasia." A parasitic infection as by the organism of Chagas may be a possibility.

The treatment of goitre is prophylactic, medical, and surgical. Prophylaxis may be obtained by avoiding residence in goiterous regions. When a pregnant woman suffering from goitre is obliged to live in a goiterous neighbourhood, she should have treatment with thyroid extract. Nursing women who have goitre should also be sustained by that substance. Hygienic conditions should, of course, be seen to, and, in goiterous areas, the best general prophylactic measure is that of boiling the water for twenty minutes, although Rosenau states that 80° C. is sufficient to destroy the causative agent.

Medical treatment is definitely indicated in many cases of goitre. For example, the hyperplasia of the thyroid seen at puberty may well respond to a general supporting treatment, *i.e.*, syrup of iodide of iron, to a sojourn by the sea, or a substitute for the latter, as advocated in a letter in the *British Medical Journal* some months ago, in the form of a bottle of iodin crystals exposed in the school-room. I am now trying out this method in three or four cases by having iodin exposed in the sleeping-rooms of the young patients, the idea being to spare the thyroid secretion and

so prevent hyperplasia. The similar extra call upon the thyroid, consequent upon pregnancy, may require small doses of thyroid extract during the period of gestation. The miseries of early pregnancy and the discomforts of the latter months are often benefitted to a surprising extent by this treatment.

The diffuse colloid goitre in its early stages frequently responds to the treatment outlined in a most satisfactory manner, even a nodular or cystic goitre may appear to improve very much because the treatment will reduce the associated hyperplasia or parenchymatous hypertrophy.

The toxic forms all benefit greatly and many will be cured by prolonged rest in bed with more or less complete isolation. To this may be added treatment by calcium iodide as advocated by Kummer in a Swiss magazine and reported in "Chemical Abstracts for 1917". The idea in this is to secure a retention of phosphorus and calcium in the organism, it being well known that the physical decline in toxic goitres is not entirely due to organic losses. Quinine hypobromate may also be useful. The work of Janney and of Janney and Isaacson conjointly published in August of this year, quite unsettles the management of these toxic forms. Should the cause be a dysfunction rather than a hypersecretion of the thyroid, as he suggests, the feeding of thyroid extract or the administration of Kendall's hormone may be distinctly indicated, after a preliminary detoxication by rest, intestinal antiseptics and calcium feeding. An excellent case is made out for radium treatment by Dr. W. H. B. Aikins in a paper read before the American Radium Society in June of last year. The paper of Dr. Richards, which is to follow, will deal with the use of *x*-ray as a method of treatment in simple goitre.

The surgical treatment of goitre recalls the old saying that "an amputation is a surgeon's defeat". Since Kocher and Reverdin began to teach thyroidectomy, it has become more and more the recognized treatment for toxic goitre. In malignant goitre it is the only treatment to be considered, and in advanced colloid, cystic, and nodular forms, medical treatment is useless. The same is true of benign adenomata. Complete extirpation is only called for in malignant conditions. In the removal of all other tumours of the thyroid, sufficient of the gland substance must be left to carry on the normal function or must be transplanted elsewhere in the body. The selection of cases for operation demands the most careful judgement. W. F. Porter advocates the removal of all permanent goitres of whatever character because of their potential

danger to the patient. F. N. G. Starr in the *British Journal of Surgery,* 1916, advocates much the same thing. Many other surgeons are less radical in their views. The new teaching may so modify practice in this regard that thyroidectomy may only be undertaken as a relief to mechanical pressure or as a cosmetic procedure.

Operative technique might well constitute a paper in itself. Doyen describes an operation by which he removes ordinary goitres as large as the fist, in from three to five minutes, and intrathoracic goitres in twenty minutes. This method is not generally practised. The technique published by the Mayo Clinic, or that of F. N. G. Starr, described in the paper referred to, may be taken as among the best in modern practice.

The reproach that the city of Halifax does not possess one large maternity hospital is about to be removed. The Salvation Army have initiated a "campaign" to obtain a sum of money sufficiently large to justify them in building a thoroughly up-to-date maternity hospital similar to their well-known maternity hospitals in the large Canadian cities. The members of the medical profession of Nova Scotia are particularly interested in the scheme, and some large subscriptions are expected before any appeal is made to the general public. The Governors of Dalhousie University have granted a site on the campus opposite the building on Carleton Street in which the faculties of medicine and dentistry are housed. It is understood that the authorities of the Salvation Army have agreed to a number of conditions, amongst which are that the university lecturers on obstetrics and gynæcology shall have, ex-officio, the right to use the hospital for the instruction of the students of medicine in midwifery and diseases of women.

The facilities to be granted at this hospital are only the beginning of certain movements indicative of the expansion of the clinical departments of Dalhousie University. It is felt that the time has come to strengthen and expand the School of Medicine at Halifax, the only one in the Maritime Provinces and the only one east of Quebec. The erection of a maternity hospital is the most urgent need in connection with the Faculty of Medicine, but it is not by any means the only one; several other departments must soon be enlarged in order to accommodate the greatly increased classes in the first and second years.

VENEREAL DISEASES FROM THE PREVENTIVE ASPECTS

By Captain Gordon Bates

Officer in Charge of Venereal Diseases, No. 2 Military District

THERE are so many aspects to this great problem of venereal diseases confronting us, both as physicians and citizens, that one hesitates as to just where to begin and what ground to cover in a brief paper.

In the military hospital with which I have been connected, the base hospital for No. 2 Military District, certain problems both from the aspect of cure and prevention have struck us very forcibly. In the past we have been prone to forget the fact that venereal diseases are preventable diseases just as are malaria, typhoid fever and yellow fever. The fact that the great discoveries connected with the diagnosis and treatment of these diseases have been made comparatively recently has meant that these phases of the question have not met with the attention they have deserved. Again we have not studied the causal factors involved, nor have we given sufficient attention to the far-reaching results of syphilis and gonorrhœa—actually unspeakable calamities of a widespread character.

I would like to say something to you as to the treatment of venereal disease from the preventive aspect. The primary sore of syphilis should be diagnosed early, because the resultant early treatment will mean the prevention of serious results which may ensue if the case is allowed to progress to the secondary stage. Gonorrhœa should be treated early for a similar reason. Both diseases should be carefully controlled, treated to the bitter end and *educated*, because as physicians we must cure disease, and because as citizens we must appreciate the serious consequences to the community at large which must ensue if individual cases are permitted to progress or to pass on their infections to others. It is therefore essential that we be fully conversant with every possible instrument which we may use.

Read before the annual meeting of the Medical Society of Nova Scotia, Liverpool, N.S., July 3rd, 1918.

I would like to emphasize here the fact that venereal diseases are essentially a civil problem. Obviously infections in the army are contracted from civilian sources. All the statistics we have collected to date go to prove the much greater incidence of venereal diseases among the ordinary population than in the army, as well as the steady decrease in military incidence as educational and other preventive measures instituted in the army have improved and progressed. The weekly inspection of the soldier for the detection of venereal disease, the distribution of official educational literature to every soldier, organized recreation, immediate isolation of all cases on discovery until cured or non-infective, careful education of the infected man on the dangers of his disease to himself and his future wife and children (again by means of specially prepared literature), such measures provide preventive machinery of a character such as has not been thought of by civil authorities until very recently. The result of the lack of such constructive work on their part has been, that a large percentage of the civilians who have been put in uniform since the beginning of the war have been found to have been venereally infected previous to enlistment. I could quote you a number of statistical records to prove this point. For instance, I am told that of the men now in category D in No. 2 Military District, 50 per cent. owe their status to venereal infection. In a recent enquiry instituted among venereally infected men, returned from overseas, we found that the large majority of this class had received their infection not only before leaving Canada but actually before entering the army at all. This is true, I should say, of 90 per cent. of such men. Such statistics (and I could quote you a number more) go to prove that we as civilians with a proper sense of community responsibility have something serious to think about. In an assembly such as this it is unnecessary for me to refer at length to the statistics of asylums and of gynæcological wards in support of this statement. I would like to touch on the fact that deaths or disabilities coming from general paresis, locomotor ataxia, apoplexy and gonorrhœal ophthalmia are a serious factor in producing far reaching social effects throughout the country. The same may be said of the many mutilating operations on women as well as the miscarriages, and sterility in men and women resulting from gonorrhœa and syphilis. Inefficiency among workers resulting from these diseases or their end results, mean the robbing of the country of work which should be utilized for the country's good. Death (syphilis alone is classified by Osler as one of the four greatest killing diseases) particularly unnecessary death

—and death from syphilis is unnecessary—means problems unfairly thrust upon the widow and the orphan, problems which only too frequently remain to be settled by the taxpayers, through the juvenile court, the insane asylum and the prison.

Investigation into the medical aspects of the question has revealed one factor to which the physician, in particular, must give more attention in the future. Venereal diseases, throughout the country, have been badly diagnosed and badly treated. Many patients for various reasons have not completed their treatment, with serious results both to the individual patient and the community.

One most erroneous idea has been the prevalent notion that uncomplicated soft chancre is common, with the resultant non-recognition of primary syphilitic sores. My experience has been that 90 per cent. of men with penile sores eventually develop a positive Wassermann reaction. Actually the typical deep, clean cut ulcer of chancroid is very uncommon. One will meet twenty syphilitic sores, mostly atypical and non-hunterian to one of simple chancroid.

Again the case of syphilis absolutely without symptoms is not uncommon. This fact has been forcibly brought to mind recently by observing cases where men without symptoms have married and infected their wives. This type of case is not only dangerous to others, but, in that his case is commonly undiagnosed, doubly dangerous to himself. He has provided in a large measure the explanation of the many cases of general paresis, locomotor ataxia, aortic aneurysm and early apoplexy in which there is no history of syphilitic infection and therefore (and this is the serious part) no history of treatment.

Another discovery with a definite relation to the same serious result is, that many cases of late syphilis give a history of having had their local sores treated by means of some caustic such as silver nitrate. This was commonly followed by no systemic treatment, the assumption being, of course, that the case was one of chancroid. Intra urethral chancres are also frequently mis-diagnosed with the same result.

Another proof of the number of syphilitic cases missed by ordinary clinical examination has been found in our routine Wassermann examinations. Recently in a regiment of draftees supposedly free from all infection, we found that 5·7 per cent. of the men gave a positive Wassermann reaction. Most of these men did not know they had ever been infected. Such results mean that in the more

distant past accurate methods of diagnosis were not available, while more recently they have not been utilized as they might have been. This applies both to the use of the dark field method in the examination for spirochætes and the use of the Wassermann reaction. Dark field examination is a simple method which should be used on all penile and other suspicious sores; followed, of course, by a Wassermann reaction or reactions at a time when systemic infection has had time to develop (generally four weeks). In all cases in which the clinical diagnosis is positive, energetic arsenical and mercury treatment should be begun at once whatever the result of the dark field and Wassermann. The discovery of spirochætes in a penile sore (or a positive clinical diagnosis) in the absence of a positive Wassermann is extremely important in that if active arsenical treatment is instituted at once, 50 per cent. of such cases may be aborted: while in all such cases the duration of treatment may be materially shortened. Perhaps it is unnecessary for me to emphasize the necessity for the unstinted use of the Wassermann reaction in blood and cerebrospinal fluid in many cases in which there is no particular reason for suspecting syphilis and absolutely no history of infection. Every effort should be put forth to make these laboratory procedures available to the poorest patient. They are now undertaken for any physician free of charge by the Ontario Government. I feel that this is the only proper method of dealing with the situation.

That gonorrhœal infections, both in the male and the female, have not been adequately dealt with in the past is also easily proven by the large number of old chronic cases with slight symptoms which are commonly found on routine inspection in the army. Such cases were almost invariably infected previous to enlistment. Many of them have been self treated by such concoctions as Knoxit. Many others have had internal treatment by physicians who have used copaiba or sandalwood oil for a short time and let it go at that. These preparations, of course, while useful for the treatment of certain symptoms are almost valueless as curative agents. Quite commonly local treatment has not been given. Littritis, vesiculitis, and infected prostates have not been treated at all, and not infrequently, never discovered. The two or three glass test, for the discovery of lurking infection and its site, is commonly not used. The patient, discovering that his discharge has stopped, has discontinued treatment, and not infrequently passes his infection on to others—perhaps he even marries and passes it on to his wife. This does not mean necessarily that he is a wicked or a thoughtless

man, but simply that he believes himself cured and has no conception of the seriousness of his disease. As a matter of fact, none of us have had a real understanding of these diseases up to a comparatively recent time—neither as to their cause, their course, nor their results. The public has been woefully ignorant on the subject. The physician himself has not understood.

It is perhaps not common knowledge that acute gonorrhœa may be absolutely cured in less than a week by means of the Ballinger sealed-in treatment. The greatest importance of this method is its relation to early treatment, as unless cases report within twenty-four hours after the appearance of their first symptoms, it is not generally applicable. In cases in which treatment is commenced previous to this time, 90 per cent. may be cured within the time limit mentioned.

It seems to be necessary that some method of enforcing education and treatment, as well as making treatment easily available, be found. Happily, a realization of this fact has become somewhat general. In a number of States in the United States such legislation has been passed, as well as in four provinces of Canada, during the last few months. The success of this legislation will depend largely on the support it receives from the physician. His will be the opportunity to watch carefully over cases until their treatment is completed and to make momentous decisions which, unmade in the past, have resulted in disastrous consequences. The opportunities for educating patients in the dangerous and insidious character of their infection as well as the difficulties of cure will be a valuable one. It should be incumbent upon every physician to give his patient educational literature and if I may make the suggestion, moral instruction as well. I feel that a talk straight from the shoulder as to what the consequences of immorality are sure to be, is a simple duty, which every physician should take upon himself when dealing with infected patients.

For the present, reporting by number is a valuable provision, which, if carefully adhered to by physicians during the next year, will have a great effect in educating public opinion in the prevalence of venereal diseases in the community in which they live. Personally, I think it should be followed by reporting by name, but perhaps we are not ready for that radical step yet.

A further step which might be of the greatest value is some provision by which sources of infection may be traced out. In Toronto we have undertaken by means of the social case sheet to find venereally infected women who have acted as sources of infec-

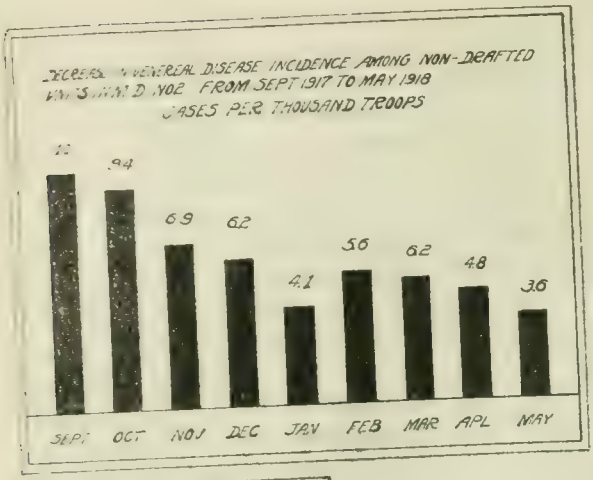
tion for men in the army. Each man is closely questioned as to the name and address of the infecting woman, and afterwards the services of the social service nurse, or, if necessary, the police have been utilized in order that she may receive instruction and treatment. Recently at Toronto General Hospital an experimental social case sheet was tried out for women attending the venereal clinic. In about half the cases questioned, it was found possible to obtain the name and address of the infecting man. This method, particularly with the aid of new legislation, may well prove a valuable means of helping to deal with this extremely difficult problem.

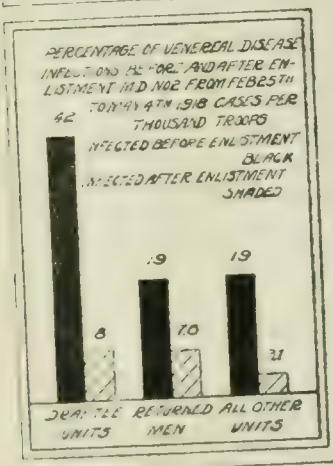
Other possibilities such as that of a medical examination before marriage occur to one. This procedure will be found to be an essential one as soon as public opinion is ready for it. The immediate necessity is the backing up of the legislation we have.

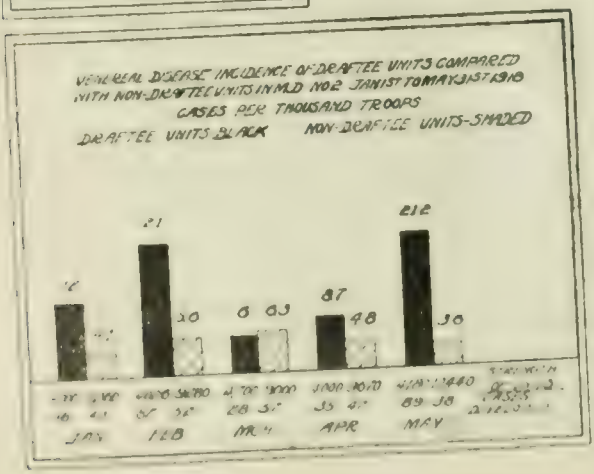
I would that at this time I could spend some time discussing the social aspects of the venereal disease problem, because only by an understanding of that aspect of the question will we ever be ble to really deal with it. The fact that (prostitution) is at the bottom of the existence of venereal disease throughout the country, must never be forgotten, and every effort should be made to study that nefarious trade with a view to sweeping it off the face of the earth. It has definite causes, and the physician with his intimate knowledge of its serious results in the production of disease and death, should play a large and important part in inducing the public to discuss it, and in leading movements for very necessary reforms.

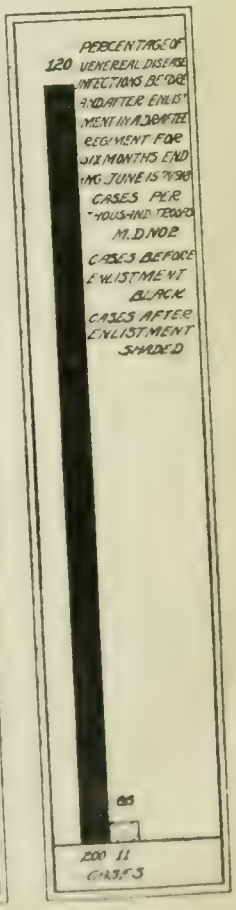
Recent studies in Toronto have proved to us that the cases of venereal infection we are getting originate from all parts of Canada. From Ontario alone we have received cases from practically all corners of the province. This, of course, means that sexual immorality of a widespread character exists—as the result of causal factors which must be operating everywhere. We have also discovered that the type of prostitute (I mean the female prostitute, but the term might be fairly applied to the male) differs in different localities. For instance, in Toronto where there are no organized disorderly houses, we have to deal with the young girl who, working during the day at some ill-paid occupation, at night, sells herself to any stranger for $2.00. In other places, notably Montreal, organized prostitution exists on a large scale, and the prostitute makes her entire living from prostitution.

That such conditions exist in Canada is indeed shocking, but the problem is full of encouraging possibilities when we go into the


DECREASE IN VENEREAL DISEASE INCIDENCE AMONG NON-DRAFTED UNITS IN M.D. NO2 FROM SEPT 1917 TO MAY 1918
CASES PER THOUSAND TROOPS
10
9.4
6.9
6.2
4.1
5.6
6.2
4.8
3.6
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APL
MAY


PERCENTAGE OF VENEREAL DISEASE INFECTIONS BEFORE AND AFTER ENLISTMENT IN M.D NO2 FROM FEB 25TH TO MAY 4TH 1918 CASES PER THOUSAND TROOPS
INFECTED BEFORE ENLISTMENT BLACK
INFECTED AFTER ENLISTMENT SHADED
42
8
1.9
7.0
1.9
3.1
DRAFTEE UNITS
RETURNED MEN
ALL OTHER UNITS


VENEREAL DISEASE INCIDENCE OF DRAFTEE UNITS COMPARED WITH NON-DRAFTEE UNITS IN M.D NO2 JAN 1ST TO MAY 31ST 1918
CASES PER THOUSAND TROOPS
DRAFTEE UNITS BLACK
NON-DRAFTEE UNITS-SHADED
1.7
2.1
3.0
6
6.3
8.7
4.8
21.2
3.0
JAN
FEB
MCH
APR
MAY


PERCENTAGE OF VENEREAL DISEASE INFECTIONS BEFORE AND AFTER ENLISTMENT IN A DRAFTEE REGIMENT FOR SIX MONTHS ENDING JUNE 1ST 1918
CASES PER THOUSAND TROOPS
M.D NO2
CASES BEFORE ENLISTMENT BLACK
CASES AFTER ENLISTMENT SHADED
120
6.6
200
11
CASES

question and find that we have in the past made no provision for teaching our young men and women not only that venereal diseases are dangerous, but that the function of sex is a sacred function with which may be bound up the expression of highest and noblest emotions—and that it should not be meddled with. Nor have we remembered the opportunities which our young men and women should have, the opportunity for healthy recreation, for normal clean companionship with the opposite sex, for marriage when nature intended it and all that the establishment of a happy home means, for happiness in work, for a good education. To how many of our normal young Canadians, particularly in the industrial sections of our large cities, are these opportunities denied? The relation of the feeble-minded prostitute to the question is also an important one.

All of these problems are capable of solution if we will but organize. We must provide our young men and women with the normalities of life. We must give them a chance. Our existing organizations are able to care for the problem to a large extent at least. The Y.W.C.A., the Y.M.C.A., the Red Cross, the churches, particularly if acting in co-operation with committees of public spirited citizens, can do a great deal even during the period of the war. Sex education can be taught and should be taught by parents if we only tell them how. Unsupervised dance halls, dangerous foci of immorality in the cities, can be superseded by dances under adequate supervision, supported by our citizens and held in our schools and parish halls. I say this in full knowledge of the fact that this has already been done in other places. The hostess house of the military camp can be succeeded after the war by the house downtown where young men and women may meet under natural and healthy circumstances. The model boarding house for girls—with an assembly hall where mixed dancing or organized recreation is allowed, should be encouraged and instituted by our national organizations. Our city parks, in which a great deal of prostitution actually takes place, should also be utilized to a greater extent than at present for organized recreation, such as, community singing and dancing. Alcohol as a serious factor is happily being eliminated. The low wage is, of course, a factor, but the greatest factor is our incorrect attitude toward the whole question. Generally the immoral person—the prostitute—is not to blame in anything like such a degree as the community—and you and I as members of the community should realize that fact.

Careful consideration of the venereal disease problem will

make us realize that bound up with it are very great opportunities for public service. The greatest opportunity of all is that given the physician. First of all he should lead in the present movement in order that all infected individuals may receive treatment. Then he should lead his community to a clearer understanding of what should follow. A clear vision and action should mean much, not only for the unfortunate infected man or woman but, also for those of our own generation whose health and happiness are much concerned; for those of future generations and for the general efficiency and real greatness of our whole country.

Major F. M. Wells, C.A.D.C., was deputed by the military authorities at headquarters to visit military district number six and deliver a short course of lectures on researches on scurvy, rickets and oral antiseptics. Major Wells gave two lectures at Dalhousie University on February 24th and 25th, which were illustrated by lantern projections and microscopic preparations. The microscopes and lantern were lent by the Department of Physiology. The lectures were based on research work Major Wells has been doing at the Lister Institute in London The demonstrations showed that scurvy was, as far as the teeth are concerned, a condition of hæmorrhage and greatly dilated blood vessels in the bulb accompanied by necrosis of odontoblasts. If the processes had not gone on too far, the condition could be recovered from by giving vitamines as they exist in fresh milk, by the absence of which the scorbutic condition had been brought about. Professor Nicholls in moving the vote of thanks brought out a number of interesting but puzzling points in the pathology of scurvy and rickets. The low anti-scorbutic power of dried or preserved vegetables was an important point brought out by Major Wells, who said that orange juice was the best anti-scorbutic and potato next.

The second lecture was devoted to an examination of the efficiency of various oral antiseptics, mouth washes, etc. He found that a mixture of "flavine," "desoxycholate" and quinine was by far the most effective. Some substances devitalized the nasal mucosa to such an extent as to render them relatively of little value.

An invitation to attend these lectures had been extended to the civilian medical practitioners and to undergraduates in medicine.

CAUSES AND CONSEQUENCES OF DISTURBANCES OF RESPIRATORY RATE AND RHYTHM

By Lieutenant-Colonel J. C. Meakins, C.A.M.C.

Montreal

THIS communication is not nearly as formidable as the title might suggest, which gives one the impression of being very profound and exhaustive. As a matter of fact you will very likely find the matter to be presented both uninteresting and incomplete. My main object in selecting this subject is to place before you one phase of the medical development of the war. In all previous conflicts the casualties could be roughly divided into two large groups, namely, wounds and intestinal infectious diseases. Since April, 1915, when the Germans introduced a new arm of offence, namely, "gas warfare," the respiratory system has taken the place of the digestive system as a vulnerable point. While typhoid fever, cholera, and dysentery became diseases of almost insignificant incidence on the Western front—gas poisoning with its respiratory symptoms became a cause of casualties of the first importance. During the year of July, 1917, to July, 1918, a considerable number of the total casualties of the British armies were due to this method of warfare. As a consequence, efforts were concentrated on the elucidation of many respiratory conditions. I propose to deal to-night with a small portion of this work, which has a direct application to clinical medicine.

In order to clear the way I wish to say a few words concerning the normal regulation of respiration. It is primarily regulated by the action of the H-ion concentration of the arterial blood upon the respiratory centre. This action is an extremely delicate one, and variations to which the respiratory centre responds are impossible of determination even by the most recent electrometric methods. Under normal conditions the H-ion concentration is kept in equilibrium by the CO_2 tension in the arterial blood. Under given conditions this CO_2 tension remains remarkably constant, as is shown

Read before the Montreal Medico-Chirurgical Society, January 17th, 1919.

by the alveolar air CO_2, which is equivalent to the CO_2 of the arterial blood. This is accomplished by the action of CO_2 on the respiratory centre, which stimulates this centre to send impulses to the subsidiary centre which controls the rhythm of respiration. The greater the CO_2 tension of the arterial blood supplying the respiratory centre, the greater the impulses to the subsidiary centre, and the greater the pulmonary ventilation. For example, an increase of 0·2 per cent. in the alveolar CO_2 will double the total pulmonary ventilation. This increase of total ventilation is first obtained by increasing the depth of each respiration. "The depth of respiration is controlled by a reflex first discovered by Hering and Breur in 1868. They found that on distention of the lungs to a certain point, inspiration is inhibited and expiration initiated, and similarly that on collapse to a certain point, expiration is inhibited and inspiration initiated; also that the nervous impulses concerned are conveyed by the vagus nerves, so that on section of the vagus these reflexes disappear. Haldane and Mavrogordato recently showed that the Hering-Breuer reflex is controlled by the CO_2 in the blood reaching the respiratory centre, so that with more CO_2 in the blood the limits of distention and collapse at which the reflex appears, become wider apart, while at the same time the inspiratory or expiratory response is stronger. In this way the breathing becomes deeper or shallower and at the same time more energetic or less energetic, with increase or diminution of the CO_2 in the blood." *

If the CO_2 tension in the blood increases, the depth of respiration increases—the same result is obtained if the Hering-Breuer reflex becomes more sensitive, as the points of the reflex will then separate with a diminished CO_2 tension in blood. The converse occurs and the depth of breathing becomes shallower, if the Hering-Breuer reflex becomes less sensitive to the action of CO_2.

The action of CO_2 can be very easily demonstrated upon ourselves. If, for example, forced breathing is carried on for a short while, it will be followed by a distinct period of apnœa of a longer or shorter duration until the CO_2 has again accumulated in the arterial blood. On the other hand, if air containing an increased amount of CO_2 (say 3 per cent.) be breathed, the respirations will become distinctly deeper, although no more frequent.

In addition to the above there is another factor which may

* Haldane, Meakins and Priestley—Reports of the Chemical Warfare Medical Committee No. 11.

stimulate respiration, namely: want of oxygen. When want of oxygen stimulates the respiratory centre, there is a somewhat similar effect, but the breathing soon becomes progressively faster and shallower than when CO_2 is the stimulus.

Want of oxygen, or anoxæmia, may be acute or chronic. The most constant signs are cyanosis, dyspnœa, hyperpnœa, Cheyne-Stokes breathing, weakness, dizziness, mental changes, tachycardia, *polycythæmia*, lowering of the CO_2 threshold, and diminution of the alkali reserve. The last three may be looked upon as compensatory phenomena.

Having briefly reviewed the regulation of breathing, I will mention some of the more important variations which occur. These variations may be of depth, or of rate, or a combination of these:

1. Normal rate with greatly increased depth—as in severe diabetic acidosis.

2. Diminished rate with little change in depth—as in morphine poisoning.

3. Increased rate and increased depth—as in severe muscular exertion.

4. Increased rate and diminished depth—as in gas poisoning and pneumonia.

5. Periodicity of rhythm or Cheyne-Stokes breathing.

To discuss all these changes in full would occupy much more time than I have at my disposal to-night; but I may briefly review them and discuss more fully one or two of the more important.

1. The respiration of diabetic acidosis is well known to all of you. The deep stertorous breathing gives abundant evidence of increased total ventilation. During the early stages of the acidosis the formation of ammonia and eliminative power of the kidneys keep the H-ion concentration in gross equilibrium. When, however, these fail and the H-ions increase, the respiratory centre is stimulated, and showers impulses to the sub-centre to increase the pulmonary ventilation. The points of the Hering-Breuer reflex widen, each respiration becomes deeper in the vain attempt to eliminate enough CO_2 to return the H-ion concentration to normal. I wish to emphasize this character of the breathing of true acidosis —*the enormous depth of the individual respirations.*

2. The action of morphia upon the respiratory centre is to depress it or make it less sensitive to the action of CO_2. The alveolar CO_2 and the CO_2 content of the blood are raised. This causes an increase in the CO_2 capacity or "alkaline reserve" of the

blood, due apparently to the passage of alkali from the tissues into the blood.

3. In severe muscular exertion there is an increased production of CO_2 and lactic acid. This quickly increases the H-ion concentration of the blood and there is an immediate response of the respiratory centre to reduce this by increased elimination of CO_2. This elimination is at first accomplished by the widening of the points of the Hering-Breuer reflex, or in other words, an increase in the volume of the individual respirations. Eventually this will be supplemented by increase of the rate.

4. It is with the type in which the respirations are rapid and shallow that I wish to deal more particularly to-night. The researches upon which my remarks are based were done by Professor Haldane, Captain Priestley, and myself at No. 15 Canadian General Hospital. Our main problem was to investigate the respiratory disturbances following pulmonary irritant gas poisoning.

"It is now generally admitted that in acute gas poisoning the main danger to life arises from impaired oxygen supply to the tissues. This is due partly to imperfect oxygenation of the blood passing through the lungs, and partly in all probability to obstruction in the pulmonary capillaries. The failure in oxygenation has also hitherto been attributed to the layer separating the air in the lung alveoli from the blood being thickened by inflammatory change and exudation of liquid. In some cases there is little if any evidence that this thickening has ever existed. Our first idea was, that part of the thickening was still present, so that slight anoxæmia is present on exertion, owing to oxygen not being able to pass in quickly enough to meet the increased demand. Many of the symptoms, such as the slight polycythæmia observed by Captains Hunt and Price Jones, the slightly lowered alveolar CO_2 percentage observed by Lieutenant-Colonel Douglas, and the slight blood acidosis observed by Mr. Barcroft, could then be interpreted as changes compensatory to the slight anoxæmia and similar to those known to occur in normal persons at high altitude. Our first step was to test this theory by making patients ascend a stair while breathing a mixture of oxygen and air from a small mine rescue apparatus. The subjective relief from respiratory and cardiac symptoms was very marked, and in one of the patients, whose lips became distinctly blue on ascending the stair while he was breathing ordinary air, the blueness was entirely absent with the oxygen mixture.

"These experiments seemed, therefore, to confirm the theory; but further consideration soon showed that something was wanting

in the theory. In the first place, it became more and more evident that the symptoms in the gas poisoning cases were similar to a group of symptoms occurring also in the cases classified for military purposes as "irritable heart" or "disordered action of the heart", and diagnosed under various headings in civilian practice. In the second place, it was found that though the symptoms on exertion were ameliorated during the breathing of oxygen, they were not removed, and that certain very marked objective symptoms persisted, even when oxygen was breathed. Of these symptoms the most striking was excessive frequency combined with abnormal shallowness of breathing. In a normal individual the breathing becomes much deeper, as well as more frequent, on exertion; and usually the increased ventilation of the lungs is attained by increasing the depth, rather than the frequency of breathing. In the patients, on the other hand, the increased ventilation was attained mainly by increased frequency, so that on an ordinary exertion, such as walking, the breathing went up to 60 or 70 a minute, whereas in a normal individual there is usually very little increase in frequency, but a very large increase in depth.

"The shallow breathing seemed to be in some way connected with the signs already referred to, of distinct anoxæmia, particularly on exertion.

"Our next step was, therefore, to endeavour to discover the connection. For this purpose we devised an apparatus for artificially limiting the depth of breathing in a normal subject. With it we were not only able to regulate the depth of breathing without interfering with the rate, but we could obtain a graphic record of the actual volume and rate of the respiration.

"The results obtained with this apparatus were a great surprise to us and have thrown quite a new light, not only on a large number of clinical symptoms associated with dyspnœa, but also on the physiology of respiration, and particularly the effects of diminished barometric pressure and of air partially deprived of oxygen. When the depth of breathing is restricted by suitable setting of the apparatus, it is of course necessary to increase the frequency of respiration. If the restriction is only moderate, everything seems—at first—to be all right; the restricted depth being compensated for by increased frequency, so that the subject gets as much air as before, or a little more. In most persons, however, the breathing soon becomes periodic, and the *periodicity* is a reproduction of typical Cheyne-Stokes breathing. The pauses may be complete, or only partial. When they are complete, the periods of apnœa may last about as long as the periods of breathing. Dur-

ing the periods of breathing the respirations begin very gently and gradually 'wax' until there is urgent hypernœa, after which they 'wane' till they cease, and a new period of apnœa begins. Apart from the Cheyne-Stokes breathing, there are subjective symptoms familiar to us as those produced by slight anoxæmia. Headache and depression follow the experiment if it is continued for long. When a little oxygen is added to the inspired air, the Cheyne-Stokes breathing and other abnormal symptoms disappear completely.

"The fact that Cheyne-Stokes breathing is abolished by inhalation of oxygen was discovered at Guy's Hospital by Pembrey and Allen in 1905. In 1909, Douglas and Haldane found that temporary periodic breathing can easily be produced in a large proportion of normal persons, particularly if the oxygen percentage of the inspired air is low. They showed that the periodic breathing is dependent on recurring anoxæmia, and is due to the very rapid action of the anoxæmia on the respiratory centre as compared with the slower action of CO_2.

"By means of our apparatus we could completely reproduce the classical rhythm of Cheyne-Stokes breathing, and there could be no doubt that in some way it was due to anoxæmia.

"On investigating the deep alveolar air we found that on an average there was no diminution in the alveolar oxygen percentage. On the contrary, the average alveolar oxygen percentage became higher if the restricted breathing was continued; and even at the end of each apnœic period the alveolar oxygen percentage was scarcely reduced below normal. What, then, was the cause of the anoxæmia, and how could the conjunction of anoxæmia and high alveolar oxygen be explained?

"A sample of the deep alveolar air collected by the ordinary method of Haldane and Priestley has, during rest, a certain very definite composition; but there is no evidence that this composition is the same all over the lungs. We only know that the sample gives the *average* composition. From the shape of the curve representing the CO_2 content of blood saturated in presence of varying percentages or partial pressures of CO_2 it is evident that if the *average* percentages of CO_2 in the alveolar air is steady, the saturation with CO_2 of the mixed arterial blood leaving the lungs will also be practically steady. Assuming, therefore, that it is the CO^2 content of the blood that determines the breathing, the fact that the *average* CO_2 percentage in the mixed alveolar air is steady affords no evidence that the CO_2 percentage is uniform throughout the lungs. The CO_2 percentage may be higher and the oxygen per-

centage much lower in some parts than in others, since in a badly ventilated part the partial pressure of CO_2 may rise to that of the venous blood, while the partial pressure of oxygen may fall to that of the venous blood. But the curve representing the oxygen content of blood saturated in presence of different oxygen percentages in air is totally different from the corresponding curve for CO_2, and on examining the former curve it will be seen at once that a better ventilated part of the lung cannot compensate as regards oxygenation of the mixed arterial blood for a badly ventilated part. Hence if different parts of the lungs are very unequally ventilated and the breathing continues to be regulated only by the CO_2 of the blood, the mixed arterial blood will be deficient in oxygen although it is normal as regards the CO_2 content.

"Now there is strong direct evidence that during ordinary inspiration the expansion of the lungs occurs at first locally in the immediate neighbourhood of the moving chest wall and then spreads gradually to the rest of the lung as the inspiration progresses. The evidence on this point has been ably marshalled by Keith. He compares the expansion of the lungs to the opening of a Japanese fan rather than to the expansion of an elastic bag. It is easy, therefore, to see that when the breathing is shallow, the ventilation of the lung alveoli must tend to be very uneven. Practically speaking, only the parts of the lungs next to the moving chest walls and diaphragm will expand, and the alveoli in the other parts will be ventilated by indirect means, such as diffusion and air-oscillations produced by the heart's action, etc. In this way we can explain in a perfectly satisfactory manner the partial anoxæmia which accompanies shallow breathing. We can also understand much more readily how certain physiological reactions to slight anoxæmia show themselves with even a relatively small deficiency in barometric pressure. These signs are increase in the hæmoglobin percentage of the blood, fall in the steady level of CO_2 pressure in the alveolar air and of CO_2 content in the arterial blood.

"The symptoms which accompany the shallow breathing are apt to be worse at night. Sleep is often disturbed in various ways, as by dyspnœic attacks often associated with coughing, or by vivid unpleasant dreams. At the best, sleep is usually unrefreshing, so that the patient is out of sorts in the morning. We therefore investigated the influence of the recumbent position on the symptoms produced by our apparatus for restricting the depth of breathing. The effects were most striking. Thus a slight degree of restriction which produced no noticeable periodic breathing in the

upright or sitting position, produced typical Cheyne-Stokes breathing in the recumbent position; and greater degrees of restriction caused more urgent symptoms of anoxæmia. When the breathing was restricted by confining the abdomen or the thorax by means of a firmly applied flannel bandage, or a tight corset, similar symptoms—more marked in the recumbent position—could be produced. The uneven expansion of the lungs is evidently exaggerated by the recumbent position or restriction of the natural mode of breathing. We found also that in ourselves natural breathing is much less frequent; and also deeper on an average, in the recumbent than in the upright position. Thus the increased depth of breathing appears to conteract partially the natural tendency towards uneven lung expansion in the recumbent position. I do not propose to discuss this matter in further detail at present. It is clear, however, that when there is abnormal reflex restriction of the breathing, the recumbent position must tend to increase the anoxæmia. An explanation is thus afforded of a very common, and hitherto unexplained, clinical symptom, namely: orthopnœa. In cases where orthopnœa is very marked, the recumbent position produces the alarming feeling of suffocation which is so characteristic of acute anoxæmia."*

In the cases under consideration there is an evident abnormality in the effects on the respiratory centre of the stimuli governing respiration. The stimuli due to distention or collapse act prematurely. What the fundamental cause of this upset of the reflex is, I will not discuss to-night. Our chief interest lies in the consequences, or the deleterious effects of rapid shallow breathing, which if persisted in beyond a certain degree, produces an increasing anoxæmia which in turn accentuates the rapidity of the respiration. In this manner a vicious circle is established which will evidently produce a condition incompatible with life.

Although this condition has been chiefly investigated in relation to patients recovering from irritant gas poisoning, other striking and important examples may be cited. Perhaps one of the most urgent is pneumonia. We are all familiar with the dyspnœa which occurs in this disease—that typical rapid and shallow type.

The rapidity and shallowness of this breathing is not due to the extent of pulmonary involvement, else why should it suddenly cease after the crisis when the involvement remains unaltered? Likewise there is no direct relationship between the extent of the

* Haldane, Meakins and Priestley - Reports of the Chemical Warfare Medical Committee No. 11.

consolidated area and the rate of respiration. There is apparently some profound influence being exerted upon the respiratory reflex—very probably through the vagi.

The sequence of events in these cases is almost constant. The respiratory rate rapidly increases to between 40 and 50; it may remain at this point, the colour remaining good and the pulse rate, volume, and tension, quite satisfactory. If the rate increases over 50 and remains there for any length of time, cyanosis begins to develop. This is an absolute sign of anoxæmia. Following the development of the cyanosis, the pulse begins to fail and collapse of the circulation rapidly ensues. The patient then assumes a greyish colour. This is cyanosis of the most profound type and is associated with vasomotor paralysis, hence the greyish hue in contradistinction to the full plum colour when the vasomotor system remains competent.

Although the battle against the infecting organism must continue, we must not lose sight of the extremely vital disturbances of function which appear in conditions like pneumonia. The only therapeutic agencies which we have at the present to combat this type of respiratory abnormality, are morphia, carbon dioxide, ogyxen and venesection. The use of morphia before anoxæmia has developed would seem to be most rational as its action is to depress the respiratory centre or to render it and its associated reflexes less excitable. It must, however, be used with caution, and in small doses and the effect closely watched. When failure of the circulation has developed, great caution should be used as at this time the respiratory centre is very likely fatigued through being whipped too much by both CO_2 and anoxæmia, and further depression may accentuate the condition.

As yet the therapeutic value of CO_2 in certain respiratory disorders has not been extensively investigated. The theoretical indications are that it has a definite field which has been very little worked.

The use of oxygen has passed through many phases of enthusiasm and condemnation. But like any other method of treatment, it has to be used with intelligence and with a realization of what oxygen can and cannot do. The usual method of spraying the atmosphere near the patient with a stream of oxygen is absolutely useless and is money thrown away. If oxygen is to be used with best effects, it must be early in the stage of blue cyanosis and in a proper manner. By enriching the oxygen in the inspired air by four to five litres a minute, the maximum effect of oxygen will be obtained. This oxygen, however, must be intimately mixed with

the inspired air by means of a proper mask. Furthermore, the oxygen must be given continuously. A very satisfactory means of administering oxygen in this way has been devised by Haldane for use in the treatment of acute gas poisoning. This has been so modified that it can be carried on the stretcher and oxygen used as long as it be necessary. There is no doubt that thousands of lives have been saved by the proper use of this apparatus.

In venesection we have a therapeutic measure, little, if any, secondary in importance to oxygen, in these conditions. A comparison of the two would be idiotic; each has its indications and, when used properly, may give brilliant results. When cyanosis is well developed and the pulse begins to fail, it is almost certain evidence that the right heart is overburdened and that the venous pressure is too high. If this be not relieved by bleeding, shock and collapse of the cardio-vascular system soon will follow with all the attending phenomena of concentration of the blood, progressive diminution in the CO_2 capacity, or alkali reserve of the blood, or to deeper effects of which CO_2 capacity is an index. At present such effects are generally known as "acidosis", which may mean much or nothing, depending upon the interpretation. In order to relieve this condition of impending cardiac and vasomotor failure, venesection is of prime importance. In the grey stage of shock or collapse this may be impossible through the concentration of the blood in the veins; then a hot saline infusion is indicated in one arm and a free venesection from the other.

Gentlemen, in conclusion allow me to presume to address to the surgeons, one word of advice and counsel. In the present-day literature a glib discussion is now proceeding as to so-called "acid-dosis" being the cause of surgical and traumatic shock. That such an "acidosis" or reduction of the alkali reserve or CO_2 capacity of the blood does occur, under these conditions, there is now no doubt, but a careful analysis of the evidence and experiments by a special committee leads to the conclusion "that 'acidosis', a simple reduction of the bicarbonate of the blood plasma, is not a cause of shock or an important factor in its production."*

To those interested in this subject of shock I would advise careful perusal of the respiratory aspect of the question. Too long has clinical medicine and surgery looked upon disturbances of respiratory rate and rhythm as a chapter finished and closed when Skoda wrote on percussion and Laennec instituted auscultation.

* Reports of the Special Investigation committee on Surgical Shock and Allied Conditions No. 7.

A REPORT OF TWO CASES OF SPINA BIFIDA

By Max O. Klotz

Ottawa

A REPORT of the following two cases of spina bifida, operated upon successfully, is justified by the comparative rarity of the affection, occurring as it does about once in one thousand births, and further, by the relatively small number of cases which are at all suitable for operative interference.

Spina bifida cases are divided generally into three classes: (1) simple meningocele, a protrusion of the meninges which contains cerebro-spinal fluid only; (2) myelo-meningocele where, in addition to the meninges, a portion of the cord or some of the nerve filaments are involved in the hernia; (3) syringo-meningocele, where the pressure is within the cord itself, producing a protrusion of the neural canal through the bony defect.

For years the teaching has been that the condition, which may occur at any point of the vertebral column through which the cord passes, was due primarily to a congenital bony defect in the arches of the vertebræ. It is now, however, generally accepted that it is due rather to an excessive secretion of cerebro-spinal fluid, the increased pressure of which during fœtal life produces a pure hernia, and this hernia is most likely to take place in the cervical and lumbo-sacral portions of the spine where ossification occurs late.

A very large percentage of these cases is associated at birth with a hydrocephalus, or, if not then, develop that condition before they finally succumb. It is obvious therefore, that the mere removal of the sac is not going to be of any benefit to the patient unless means can be taken to prevent the development of the hydrocephalus. Similarly cases of myelo-meningocele presenting evidence of paralysis of the sphincters or lower extremities, or of deformities, are not going to be benefitted by operative measures on the sac, as in these cases the nerve elements which should find their normal destination down in the extremities, terminate in the sac itself, and it is practically an impossibility to replace these

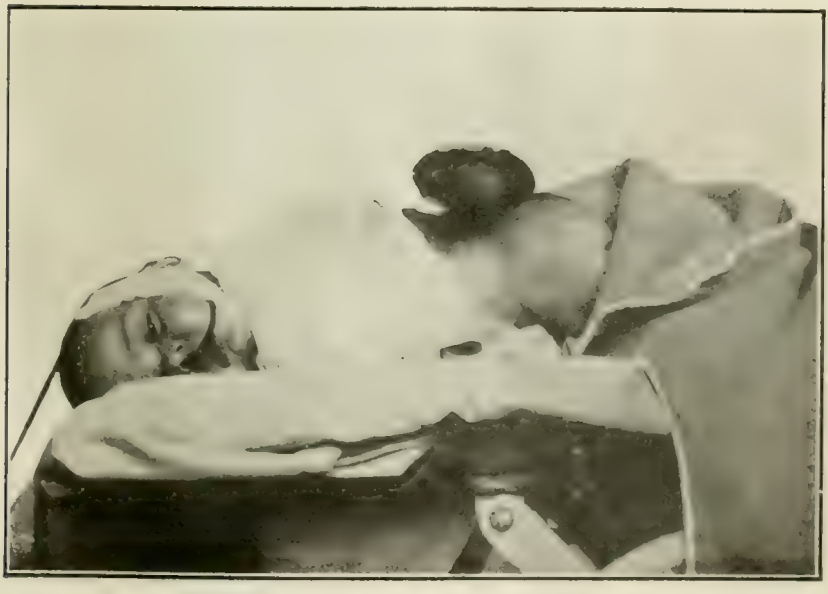
nerve structures into the spinal canal proper and to further their distribution to their normal site.

A consideration of these features will necessarily restrict the cases which are suitable for operation to a very small number indeed, that is to say, that operative measures should be undertaken only in cases which present no evidence of hydrocephalus, and no evidence of cord involvement in so far as paralysis or deformities are concerned. In selected cases the operative mortality can be reduced to an almost negligible figure, the greatest danger, apart from the immediate shock, being from sepsis which, through want of care, may so readily occur from soiling of the dressings by fæcal or urinary discharges.

Treatment. The older methods of treatment included aspiration and injections of solutions of iodine, a favourite one being Morton's solution, which contained iodine grs. x, pot. iodide grs. xxx, to one ounce of glycerine. Under the most favourable circumstances the mortality was about 50 per cent. Resection of the sac itself is the only method by means of which one may hope to relieve the condition satisfactorily. The time of operation has been the subject of discussion for many years, some authors advocating immediate operation, that is to say within the first few days after birth, others advising no interference until the child is at least ten to twelve months old. The results of the latter show, of course, a higher percentage of recovery, as the weak and feeble cases, and those developing a hydrocephalus, have either died in the meantime or have become totally unsuited for operation. The operator is well advised to wait, if possible, till the child is well developed physically, and also that he may form a definite opinion as to the suitability of the case. One may require, however, to operate under circumstances which are not such as might be desired, as in cases where the surface of the tumour has become excoriated and where danger of leakage and subsequent infection are imminent (Case No. 1).

Case No. 1. Baby E. P., male, aged four months, third child in the family; all others normal; no history of any similar occurrences on either the father's or mother's side. The tumour mass had not increased to any appreciable degree since the time of birth and there was no evidence of undue cerebral pressure at the fontanelles. The child itself on admission to the hospital weighed ten pounds, and was not particularly well nourished, and in this respect did not appear to be a suitable case for operative interference. On the other hand, however, the greater part of the

Case No. 1



Case No. 2

surface of the tumour was represented by a thin membranous structure covered with excoriations along its posterior border, which threatened to perforate the sac at almost any time. Owing to this fact, and as the tumour itself appeared to be a pure meningocele not associated with any paralysis, deformities, or other disabilities, it was decided to resect the mass at once. This was done on July 3rd, 1918, and with care the whole sac was dissected free from the skin, fascial, and muscular layers, to its point of exit from the hernial opening in the spinal canal, which the *x*-ray proved to be due to an absence of the arch over the third lumbar vertebra. The neck of the sac, which fortunately was not ruptured during the procedure, was tied off with No. 4 iodinized catgut after it was determined that no elements of the cord were involved. The remaining structures were united by two layers of catgut, and the skin closed by skin-clips, after the redundant portions had been removed.

Ether was used as an anæsthetic by intra-tracheal insufflation and proved satisfactory. During the course of the operation the hips of the child were raised some ten inches higher than the head to prevent possible sudden drainage of cerebro-spinal fluid. For the first forty-eight hours the child was kept lying on its stomach with hips elevated, being permitted to lie on its side at the expiration of that time. It made a practically uninterrupted recovery with comparatively little evidence of shock. It was kept in the hospital for three weeks for observation, at the end of which time it had gained four pounds. At the moment of writing it is enjoying excellent health, has gained steadily in weight, has shown no signs of any hydrocephalic condition, and promises to develop in a perfectly normal manner.

Case No. 2. Baby E. R., aged seven months, weight thirteen pounds, first baby in family; parents both healthy and no history of similar occurrence in either family. The mass which had not increased since birth, was about the size of an orange covered with normal skin throughout the greater part, except along its posterior border, where the covering of the sac was represented by a thin translucent membrane, a portion of which, to the extent of a fifty cent piece, appeared to be ulcerated, "weeping" a thin serous discharge. The child itself was a well developed, healthy, and well nourished boy, without showing any evidence of paralysis or other nervous disturbances so frequently associated with spina bifida. This led me to believe that the condition was a simple meningocele and on operating on July 5th, 1918, I proceeded to excise the sac

in the same way as in Case No. 1, but found that it was impossible to do so without constantly breaking into sac itself so that it was more expedient to incise directly into the sac from above downwards and lay it wide open. At the bottom of the sac, and lying in the hernial opening of the spine, was the epiconus of the cord. It had been pushed through the hernial opening and it was found practically impossible to replace it. The opening was closed by three layers of deep sutures; first a layer of fine No. 1 catgut, approximating the meningocele surfaces throughout the length of the hernial opening. Immediately above the herniated portion of the cord the lining of the sac was incised, and above this a second layer of catgut inserted into the fascial and muscular layers or either side. The redundant portion of the sac, including the skin, was now removed and a final layer of interrupted heavy catgut sutures inserted, which brought the muscular layers forming the boundary of the area involved, into apposition. The skin was closed with clips and a small dry dressing covered with oiled silk applied.

Ether was the anæsthetic used, given by the intra-tracheal insufflation method, and proved exceedingly satisfactory indeed. The same precautions in respect to the elevation of the child's hips during the course of the operation were observed as in Case No. 1. There was practically no shock and the child made an absolutely uninterrupted recovery and at the date of writing has gained five pounds, and is learning to walk.

Summary

A small percentage of cases of spina bifida carefully selected with due regard to the presence of hydrocephalus (arrested), and deformities or paralysis, is suitable for operation, and offers a good prognosis. The age best suited for operation is from nine months to two years, but operative measures may be taken much earlier where ulcerative processes or danger of rupture threaten the integrity of the sac. Regard for the fact that the condition is due to increased pressure, producing a hernia, will preclude unnecessary operations on the bony structures of the spinal canal. Careful preparation of the patient, careful anæsthesia, preferably by the intra-tracheal insufflation method, and extreme care in the operative technique and after treatment, reduce the question of shock to a minimum, so that the operative mortality, *per se*, is an almost negligible quantity.

THE DIAGNOSTIC VALUE OF THE *X*-RAY EXAMINATION IN PULMONARY TUBERCULOSIS

By W. A. Wilkins, M.D., C.M.

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CONSIDERABLE confusion appears to exist in the minds of the medical profession concerning the value of the *x*-ray examination with reference to pulmonary tuberculosis. There are several reasons for this, two of which appear to be to me important; namely, lack of skill in interpretation, and the expectation that the *x*-ray will tell the whole story unaided. We are accustomed to accept as final, the verdict of the *x*-ray examination with reference to fracture, dislocation and many other conditions, because the evidence is indisputable and of such a nature that all who run may read. Accordingly, we not unnaturally, perhaps, expect the same positiveness on all matters concerning the ills to which the flesh is heir. We do not stop to consider the pathology of disease nor the physics of *x*-ray light, and, in addition, we fail to appreciate that our powers of observation may be limited, or that the evidence submitted may not be in a language that all can read. Further, it may be that in the present state of our knowledge no one can read correctly all that may be on the plate. In pulmonary conditions, especially, there is need for the very greatest care in *x*-ray interpretation, unless, through reckless diagnosis the method be discredited. Any opprobrium which may result through faulty diagnosis should rest upon the individual and not upon the method. Comparatively few errors are due to overlooking the presence of disease, but many are made by pronouncing as tuberculosis a condition which is not tuberculosis. However, this feature is not confined to *x*-ray interpretation alone.

Read at the meeting of the Montreal Medico-Chirurgical Society March 15th, 1918

The first obstacle offered to an easy *x*-ray diagnosis is that nearly all chests will show some degree of pathology upon the *x*-ray plate. This is so constant that it must be accepted as a normal finding. Here is a pitfall for the inexperienced, a problem for the trained observer, and a harvest for the charlatan. The next difficulty is that the diagnosis is not always worked out in collaboration with the clinician, and even access to the valuable information contained in the clinical history sheet may be neglected. It should be emphasized that in order to obtain results, collaboration with the clinician is essential. Special study of the plate may be made of regions which give rise to physical signs, or on the other hand an explanation of certain shadows may be sought for in the physical examination. In saying this, it is not intended to convey the impression that the diagnosis of pulmonary tuberculosis is not possible by means of the *x*-ray examination alone; far from it. The greater number of cases require no further confirmation, nor for that matter, does the clinician require other aids for mere diagnosis than his own skill; but it is intended to emphasize that if it is desired to obtain the most that may be found in a case, no method of examination, including the *x*-ray should be neglected. The *x*-ray may be superfluous in some cases, but in many it will be vital. In doubtful cases it may convert a suspicion into a certainty or set at rest all doubts.

Another point is that the *x*-ray technic should be perfect for chest work. Good stereoscopic plates in the vertical position are advisable, and the fluoroscopic examination should not be omitted. Information regarding the movements of the diaphragm and the heart are obtainable only by this method.

It has been stated above that nearly all chests will show some degree of pathology, and this feature is so constant that it may be designated as the normal pathology of the chest. This consists of shadows which are seen on the plate of the individual who goes about his daily occupation without the slightest suggestion of any impairment of health. They are seen also in healthy children. These shadows are situated at the roots of the lungs, along the course of the bronchi and bronchioles, and at the points of bifurcation wherever branching of the bronchial system occurs. They are cast by the bronchial system with its accompanying lymphatics and blood-vessels, and by the lymphoid elements at the roots of the lungs and at the points of bifurcation of the bronchi and bronchioles. They are normal findings, but their visibility on the plate increases with age and with the extent to which they

are involved by pathological processes. When one considers the impurities that are constantly being inhaled, it is not surprising that the lymphatic system, associated with the respiratory tract, should almost always show some evidence of pathology, but it cannot be termed strictly an evidence of disease. Hence occupation, environment and age, apart from disease, will affect, to some extent, the degree to which these shadows are present. The structures at the roots of the lungs are of such a nature as to cast shadows always. When the areas drained by the lymphatics which filter through the glandular structures, or the glandular structures themselves are diseased, resulting in increased infiltration, then these shadows will be increased in extent and in density. Hence it is evident that an occupation or an environment which entails the inhalation of impurities, will give rise to denser and more extensive shadows in a lung which is otherwise healthy and may be regarded as normal; also, other things being equal, the presence and extent of these shadows will increase with age.

The quality of the shadow is a matter of extreme importance, varying with the age of the lesion. Old lesions are dense. In recent invasion or in an active lesion, the shadow is generally light, feathery and small in extent, and a favourite situation is in the upper portions of the lungs, either supra- or infra-clavicular. To demonstrate this, it is necessary to have good plates. There is another kind of shadow which requires mention, consisting of small more or less circular circumscribed and sharply defined shadows which may be found anywhere from the root of the lung to the periphery, and from the base to the apex. They seldom bear any relationship to physical signs or to the present state of health of the individual. Occasionally a blurring of one or more of these shadows suggests the probability of active disease, but as a rule they merely represent an old healed lesion. They are no doubt indications of old disease of some nature. If they are evidences of old tuberculosis, they are found so frequently that one is forced to the conclusion that in proportion to the number of individuals attacked, tuberculosis, after all, claims the full penalty in comparatively few, and that the majority of cases are light attacks which run a course unrecognized from invasion to recovery.

For practical purposes, I have divided cases of pulmonary tuberculosis into four groups. The first group comprises those cases in which the clinical and *x*-ray findings are in agreement. The second group, in which the diagnosis is based upon clinical evidence only. The third group, in which the diagnosis is based

upon *x*-ray evidence in the absence of physical signs, and the fourth group in which the disease may be present though not recognized by either the clinician or the roentgenologist.

With reference to the first group, namely, cases in which the evidences of tuberculosis are manifested by clinical examination and by the *x*-ray, this fortunately includes the greater number of cases. It is not intended to except those cases in which an original error of diagnosis has occurred by either method, an error which might have been avoided by more careful examination of the patient, or by closer study of the *x*-ray plate. This is regarded as a personal factor and should not be advanced as a triumph for one method to the discredit of the other. Advanced cases with copious signs and heavy shadows require no skill to recognize, although occasionally a case occurs which will require considerable thought for a differential diagnoisis. The cases with well marked pathology seldom give rise to discussion. The only observation to be made on this group is that the *x*-ray frequently reveals a greater extent of disease than the clinician believed to be present, and that the post-mortem table would probably show greater involvement than indicated by the *x*-ray. The explanation of this difference in degree is that the deeper situated lesions cannot always be demonstrated by the clinician with the same satisfaction as the more superficial. An isolated deep seated lesion surrounded by healthy lung tissue has a better prospect of being brought out by him than have all the ramifications of extensive disease. In the chest, depth is no impediment to the *x*-ray and the entire lung, superficial or deep, diseased or healthy, will be projected on the plate. But even stereoscopically one does not obtain the same impression of extent as he does when viewing the lung cut up upon the post-mortem table. Any discrepancy in this group is likely to occur only with reference to the extent of the disease and not with the recognition of its presence, for either method alone could recognize it.

The second group, namely, cases in which the diagnosis is based upon the clinical evidence only, should be a small one. I would say further that there are many experienced roentgenologists who would not acknowledge the existence of such a group, under taking to diagnose tuberculosis always before the clinician. The cases are early ones and situated superficially. The existence of this group and its size will depend upon the determination of what are the earliest clinical signs which will warrant a diagnosis of tuberculosis, and whether or not the pathological changes are sufficiently marked to cast recognizable shadows on the *x*-ray plate.

If the pathological changes in the tissues are of such a nature that they can be recognized only by magnification, that is, with the aid of a microscope, then there is little chance of their shadows being recognized by the unaided eye. The shadows would be so faint as to escape recognition even upon the closest scrutiny.

The third group comprises cases in which the diagnosis is based upon the *x*-ray evidence in the absence of physical signs in the chest. Some clinical evidence of disease is present, such as elevation of temperature, rapid pulse or cough, and the clinician, though suspicious, is unable to locate the site of the lesion by ordinary physical examination. In these cases there are frequently evidences of disease in the lymphoid elements either at the roots of the lungs or at some point of bifurcation of the bronchial tree. I believe that lesions of this nature can be demonstrated by the *x*-ray examination, but to establish the diagnosis, requires the support of the clinician. To insist upon a diagnosis of tuberculosis in the absence of corroborative clinical evidence can bring only discredit. Theoretically the *x*-ray should reveal more than the clinician can find; practically it is not wisdom to insist upon a diagnosis based on doubtful shadows unless this diagnosis is supported by clinical evidence.

The fourth group comprises doubtful cases in which a negative opinion has been expressed by both the clinician and the roentgenologist, and in which at a later period a definite diagnosis of tuberculosis is established. In so far as our facilities exist for tracing these cases, they form a very small percentage. It may be that at the first visit the condition was too early to be recognized, or it may be that it was not present, the condition developing later. Although these cases are real problems there is little to be said concerning them, except that we are doing all we can day by day to solve them. I am of the opinion that in the present state of our knowledge very few cases are unrecognized.

To sum up, the *x*-ray examination is of undoubted value and has a well assured position among the methods of examination with reference to the diagnosis of pulmonary tuberculosis. Errors in *x*-ray diagnosis will seldom be due to lack of evidence on the plate, but to lack of skill in interpreting the evidence. There is little danger of overlooking the disease, but a great tendency to regard the "normal pathology" as an evidence of active tuberculosis. Only familiarity with the subject from all angles, and experience in reading the real meaning of these shadows will avail. In the majority of cases the diagnosis is possible from either the

clinical or the *x*-ray examination alone. If one desires to study a case intelligently, no source of information should be neglected. Even when access has been had to all available information, results will be sufficiently below 100 per cent. to remind us that after all we are only human. In extenuation it is submitted that no method of examination, nor combination of methods, will give rise to results 100 per cent. correct. The margin of error will grow smaller with increasing experience, but it is too much to hope that it ever will disappear entirely.

ONTARIO MEDICAL ASSOCIATION

As announced in the March number, the Ontario Medical Association will hold its thirty-ninth annual meeting at Toronto, on May 28th, 29th, and 30th. In addition to the information published in that issue we are informed, on going to press, that the Address on Medicine will be given by Sir St. Clair Thompson, of England, and that many prominent men both from Canada and the United States will participate in the meetings. Indications point to a very enlightening and successful convention.

ANATOMICAL AND BACTERIOLOGICAL FINDINGS IN THE RECENT EPIDEMIC PNEUMONIA

By Horst Oertel, M.D.

THE evidence presented here is from material collected at the Royal Victoria Hospital by Doctors Bruère, Crowdy, Pedley, and Gross during last October and November. I have compiled and co-ordinated their findings.

In the first place, the chart (inserted below) shows that this material consists of two parts, the anatomical and the bacteriological, and for convenience sake I will consider them separately, especially as the bacteriological includes also some clinical investigations.

We have here the findings of forty-two autopsies which were thoroughly investigated; there were several others which are not included, as they were not complete. It will be seen that the majority of the autopsies occurred amongst young individuals; furthermore, our material consisted of twenty-eight males and fourteen females, and it is of some interest to observe that there is a marked change in the type of admission, for from the 27th of September to the 15th of October, autopsies were performed on twenty-two males and one female only, the twenty-two males being mostly soldiers; while from October 15th to November 21st, there were autopsies on thirteen females and six males. This, of course, is of local interest, but it also shows, what has been borne out by experience elsewhere, that the disease is essentially one in young persons of vigorous, strong and plethoric constitutions, and this applies not only to the males, but to the females. One type of female is especially prone to infection with fatal termination, that is the pregnant woman.

I shall divide the anatomical lesions into two groups: those which represent the local manifestations, and those which represent the general infection.

From the Pathological Laboratories of the Royal Victoria Hospital and of McGill University, Montreal.

Read at the fourth meeting of the Montreal Medico-Chirurgical Society, December 20th, 1918.

First, as to the local lesions: these centre largely in the respiratory organs and I shall take them up in their natural sequence. In the first place, as far as the mouth, pharynx, the nose and the tonsils are concerned, our material shows them anatomically intact. We have been unable to find any definite lesions in them, although at times hæmorrhages were clinically reported from the nose. But as one passes down the respiratory tract, below the larynx, sometimes high up in the trachea and sometimes farther down, definite and more or less characteristic changes are met. There is almost always very marked, intense, congestion and very frequently exudative inflammation of the trachea, which in some cases goes on to the formation of a croupous membrane. There exists increasing congestion from the larynx downward; at the bifurcation of the trachea it becomes intense, and a croupous membrane covers the surface. This inflammatory condition usually extends to the bronchi and continues into the bronchioles which are the seat of variable exudative lesions. That takes us to the lungs themselves, and here it must be noted—somewhat paradoxically—that constant is the inconstancy of the lesions. By that I mean that one can find in these cases almost all the various inflammatory lesions of the lung examplified, often combined, and they correspond very closely to the peculiar clinical manifestations in this epidemic. Some of the virulent and rapidly dying cases show only extreme congestion, the lungs are dark bluish and full. (This gave rise to the story that the disease was really typhus or plague.) Early is also massive inflammatory œdema, so that the lungs appear as if drowned, if not actually consolidated, at least firm and filled with fluid. On section, frothy fluid drips from the knife and organ. At times the inflammatory œdema was of a character to be termed serous pneumonia. There are other instances in which the lesions in the lungs correspond practically to those of the first or red stages of a lobar pneumonia, more or less irregular, though sometimes quite definitely lobar. Again there are others, especially in those that linger, in which the lung shows grey hepatization, and this may be diffuse, or it may be patchy, so that on palpation the lung is nodular to the touch. The majority of cases show, in addition to these pneumonic lesions, very definite involvement of the bronchi in the lung and these, like the lesions of the lung, vary. The bronchial mucous membrane is sometimes covered by an extremely hæmorrhagic serous exudate; then again there exists purulent bronchitis, and in some cases we have observed a productive obli-

terative bronchiolitis, that is, the formation of granulation and cicatrical tissue gradually growing into the lumen of the bronchus. In a few instances the purulent inflammation was so great that abscess formation with softening occurred in the lung. Microscopically the exudate shows as many differences as is to be expected from the gross appearances. Sometimes there is only a serous exudate, practically always, with extreme hæmorrhagic engorgement, or, massive red hepatization, then again purulent or fibrinous pneumonia in varying proportions as in ordinary lobar pneumonia, alone or interchanging with the so-called catarrhal type in which the exudate is made up of large, flat, swollen, leucocytic cells with an unusual quantity of blood. Moreover, the occurrence of multiple septic thrombi with irregular hæmorrhagic infarction of surrounding lung tissue is not infrequent. Hyaline thrombi in the interalveolar capillaries are also to be noted. In one of the cases in which the bronchi were particularly involved we found the influenza bacillus in the lining epithelial cells and in the exudate which occupied the bronchial tube. It is evident that we are dealing in this epidemic with a peculiar erratic and anatomically extremely variable disease without orderly occurrence and sequence.

At the beginning of the epidemic, whether by accident or not, it appeared to us that cases of a severer and diffuse hæmorrhagic type of pneumonia were more frequent; toward the end it appeared as if the infection had become attenuated and simpler, ordinary broncho-pneumonic types occurred.

Practically all cases showed a very marked sero-fibrinous pleurisy. The exudate was large in quantity, fluid, and the amount of fibrin great. Very frequently the fibrin formed a thick membrane on the surface of the inflamed pleura. Pericarditis was very rarely observed in this epidemic.

So much for the local manifestations. Now secondly, as to the general results of the disease. In the first place there was noticeable hæmolysis, the blood being fluid throughout, even in the heart. Even terminal clots were not seen. All the organs showed the effects of parenchymatous degeneration, or degenerative inflammation. This was most pronounced in the liver which was generally more affected than even the kidney. It was associated with icterus in a number of cases leading to distinct jaundice of the skin and conjunctivæ. In cases in which section of the brain was permitted, very marked œdema was found; the amount of fluid which escaped on opening the skull was considerable, the lepto-meninges turbid, opaque. It had all the appearances of results of an intoxication.

So much for a short review of the anatomical findings.

In the bacteriology we are on more uncertain ground. We have here two sets of investigations. Sputa of twenty-five patients were examined, and of these nineteen had definite pneumonia; in seven, certain influenza bacilli were isolated; that is, definitely hæmoglobinophylic in culture. Probable influenza bacilli were found in six instances. Of the autopsies we made bacteriological examinations in twenty cases and the influenza bacillus was definitely culturally recovered from bronchi and lungs in eleven, in none of these pure, but always in symbiosis with other micro-organisms most frequently with the pneumococcus; eight of the eleven cases were influenza plus pneumococcus infections, while in three the influenza forms were associated with other cocci. In seventeen out of the twenty bacterial examinations from autopsy, the pneumococcus in one or other strain was found. Anærobic cultivations gave no specific results.

Now this is our evidence. It seems to me impossible and premature to draw conclusions, more especially with regard to the ætiological relation which the influenza bacillus may have to these infections. We know practically very little with regard to the pathogenicity of the influenza bacillus. It is an extremely uncertain quantity. We know that it may exist even under normal conditions in the nose, mouth and throat as a saprophyte, but it also has been found frequently as a partner of mixed infections, and no one knows exactly what rôle the influenza bacillus may play in these mixed infections. For instance, it has been recovered from tuberculous cavities and one cannot say whether it lives in the tuberculous cavities as a saprophyte on dead material or as a parasite with the tubercle bacillus and others. Moreover, in the majority of cases, at least in the past, the invasion of the influenza bacillus has been found extremely limited. Up to this epidemic it has been very rare to recover it from the blood, so rare that it is generally not attempted in cultivation. Moreover, its rôle in pneumonia is also unsettled, especially how much is due to its own action and how much to that of accompanying micro-organisms. Ordinary laboratory animals have been found hardly or poorly susceptible to it, and the sterile cultures of the bacillus produce about the same effects in animals, that are susceptible at all, as those in which the bacillus itself is used. Moreover, the influenza bacillus confers only a feeble and uncertain resistance, excites too little antibody formation, so that our ordinary serological tests for infection, as agglutination by sera of infected animals, are uncertain. I am

aware that recently different statements about these points have been made, but these must be confirmed by subsequent investigations.

It is said that the strain of the present epidemic is a particularly virulent one with invasive properties, and thus differs from all those which have so far been recovered. That is possible and cannot be denied.

Some claim it possible in this epidemic to recover influenza bacilli from the blood and other organs, and that the blood agglutinates this particular strain—whether that is universal experience remains also to be seen. But there is one certain point which is interesting, and may be of importance. It was brought out prominently in this epidemic and has not, I think, been sufficiently appreciated in the ætiological relations of the influenza bacillus; that is, its symbiosis with other pathogenic organisms, especially the pneumococcus. In our own results it was never found pure, but in the majority of cases with the pneumococcus, then also with other cocci. It has been further shown by Dr. Bruère, and some others, that the influenza bacillus in culture grows better and more abundant in symbiosis with other cocci, especially the pneumococcus. This is contrary to the older experience that it occurs almost pure in influenza.

Now it is quite conceivable, from our anatomical and bacteriological findings, that persistent symbiosis of these micro-organisms may biologically modify them and, therefore, their actions and interactions, and growth of one in symbiosos with the other may enhance the virulence of both. It may also account for the peculiar inconstance and variability of the lesions because the symbiotic balance may not always be even and may lean sometimes to one side in favour of one, and, at other times to the other side in favour of the other partner. These factors may at least in a measure be responsible for the peculiar erratic characters, the severity, the malignancy of the present epidemic. In conclusion, I personally have no doubt, that in this, as in other epidemics, certain environmental factors are probably also of importance. The unusual climatic and the nutritional conditions which on account of the war prevailed throughout the world during last autumn may have exercised an influence on the occurrence and character of the present epidemic.

All of these are not definite conclusions and they make clear only one point, viz.: that there is still much to be learned about the internal as well as external factors which enter into the occur-

rence of epidemics. Thanks are due to Mr. H. E. Webster, Superintendent of the Royal Victoria Hospital, for his co-operation in this study.

Autopsies, 42:—Age, twenty to thirty, thirty-one cases; age thirty to fifty, seven cases; age fifty to sixty-three, four cases.

Sex—Males, twenty-eight; females, fourteen.

From September 27th to October 15th, 1918—twenty-two males (mostly soldiers); one female.

From October 15th to November 21st, 1918—thirteen females, six males.

BACTERIOLOGY

(*a*) *Clinical:*

Sputa examined (of these, nineteen had pneumonia)	25
Definite influenza bacillus	7
Probable influenza bacillus	6
Pneumococcus recovered (with streptococcus viridans and micrococcus catarrhalis)	19

(*b*) *Autopsies*—Twenty bacteriologically examined:

Influenza bacillus, none pure	11
" " with pneumococcus	8
" " with cocci	3
Pneumococcus	17

CONSIDERABLE attention has been attracted to a new method of treating disease which has been employed very successfully at the military hospitals where it has been introduced. It consists of the use of a mineral, double nitro-peroxide, which actually extracts inflammation from the body. The salt is mixed with a starchy substance which holds its action until it is placed on the skin over the diseased bone, from which it extracts the impurities, the germs, and their poisons. The material is sprinkled on lint or gauze and when the dressings are removed six or twelve hours later, blisters will be seen on the skin. If there is no infection the salt will not affect the skin. This treatment has been introduced by Dr. F. Pridham, of Johns Hopkins Hospital, Baltimore, and is said to be particularly effective in cases of inflammation of the joints—rheumatism

SO-CALLED TRENCH MOUTH AND OTHER MANIFESTATIONS OF VINCENT'S DISEASE AS A SPREADING INFECTION IN CANADA

By G. F. Laughlen, M.D., C.M.
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DURING the last two years, a number of articles have appeared in British and American medical journals bearing on Vincent's disease as it affects the mouth, pharynx and other mucous surfaces. Vincent's disease of the gums, which in the majority of cases is primary to Vincent's disease elsewhere[1] seems to have attracted but little attention prior to 1917. Since then the so-called "trench mouth" among the overseas troops has been identified as Vincent's disease, and many statistics are now available. Statistics, however, seem to be largely wanting in the United States and Canada. Greeley[2] states that he knows of no statistics to show the frequency of Vincent's disease in the United States.

As a result of investigation during the recent months, we have been able to ascertain that Vincent's disease is of more frequent occurence than is generally suspected. A record of cases admitted to military throat and dental clinics and civilian dental clinics of the Toronto General Hospital is very striking. During the five months of April, May, June, July and August, 1918:

Number of cases admitted	38
Cases showing lesions about the gums	31
Cases showing lesions about the tonsils	15
Cases among cilivians	16
Cases among soldiers	22

The total number of new cases examined in the above clinics for all diseases of the mouth and throat did not exceed eight hundred and fifty, and of this number thirty-eight, or 4·5 per cent. showed Vincent's disease. In the civilian dental clinic, of one hundred and fifty new cases admitted, 10 or 15 per cent. showed the lesion about the gums. Ten of these cases were females.

We have found that the disease is prevalent among our civilian population and among our soldiers who have not served overseas, although many cases recur in returned soldiers who have suffered from so-called trench mouth overseas; others develop for the first time after their return to Canada of men who have not suffered from affection of the mouth or throat overseas.

Several of our cases showed the lesions about the teeth and tonsils and ulcerative areas tending to spread backwards from the molar teeth. In one case of marked severity the lesions occurred as extensive sloughing ulcers on gum margins, cheeks, tonsils and tongue. The involvement of the tongue is of special interest as it is very rare. McKinistry[3] states that in his large series of cases he did not find the tongue involved in any case. We have records of a case which was admitted to the Toronto General Hospital on January 3rd, 1914, suffering from an ulcerated condition of the mouth. The ulcers involved tonsils, gum margins, cheeks and right side of the tongue, where it lay up against the last molar tooth.

A diagnosis of Vincent's angina was made in this case, which was progressive, and patient died on January 23rd, 1914. Profound prostration and emaciation immediately preceded death.

In another case, which is not quoted above, we found the organisms abundant in the sputum, while no ulcerative lesions were present in the mouth or pharynx. A complete description of Vincent's disease is given by McKinstry[3], Greeley[2], and other authors.

In our experience the diagnosis of Vincent's disease from smears is comparatively easy. We have made smears from the throats of individuals who did not show any lesion and from sloughs which so frequently occur following tonsillectomy. Although spirochaetæ and bacilli were present in a few of these smears, the microscopic picture could not well be confused with that given in Vincent's disease. The organisms common to this disease, namely, bacillus fusiformis and spirochæta macrodenis, lose the stain in Gram's method. We have found Gram's stain unsuitable for the demonstration of the spirochæte, unless special care was taken

in counterstaining. McKinstry[3] gives 10 per cent. carbol fuchsin as a suitable stain, but we have found methylene blue one and one-half minutes and carbol fuchsin 10 per cent. for forty seconds to give us our best results. With this stain the fusiform bacilli show a distinct barring and the spirochæte are stained red.

By using deep serum-glucose-agar tubes containing bits of guinea pig liver and spleen, in nearly all cases we were successful in growing the bacilli, but in culture they tended to lose their curve and become less pointed. In some of our cultures we also obtained long slender forms, but we were unable to obtain definite spiral forms. Cultures were incubated for five to ten days. Gas formation and a very foul odour were present in all successful cultures.

A diagnosis of Vincent's disease cannot be made from cultures alone. Smears were made from swabs sent to us for the culture of diphtheria bacillus and fusiform bacilli, and spirochæte were found.

McKinstry[3] states that the disease does not appear to be highly infectious. That the disease occurs in epidemics there can be no doubt. In the officers' mess of the 97th battalion, in the spring of 1916, one case occurred among thirty officers. This was followed by six other cases during the following six weeks. In another instance in a small boarding house, two boarders became infected from a third one who suffered from the disease. One of our cases occurred in a doctor who a short time previous to graduation was employed in a drug store. He states that the proprietor has a chronic ulcerative patch in his tonsil. He attributes his infection to using a lead pencil in common with the proprietor.

The clinical history has been given by other writers and with one or two exceptions, all our cases have followed a similar course. The following illustrates a severe yet typical case:

1. James B., admitted to hospital ward April 1st, 1918.

Complaint. Sore mouth and throat for about two months. This was so severe for past week that he was unable to take food.

Personal history. He has been an inmate in a penitentiary for four years. He smokes about seven cigarettes a day. Had syphilis five years ago.

History of illness. Two months ago his mouth felt a little sore when eating. This continued to grow worse until his mouth became so painful and his tongue so swollen that he could not eat and scarcely talk. He had not eaten anything for four days previous to admission, but slept well during the night.

Examination. Patient thirty years of age and well nourished. Appeared to have some pain; could not speak above a whisper. Teeth were badly discoloured and a few carious. There were ulcerated areas along gum margins and in mouth, especially in front of anterior pillar on right side. This condition also extended over both tonsils. The ulcers were covered with a large amount of slough and necrotic tissue. The tongue was swollen and the whole mouth appeared congested and tender. The breath was very foul.

The urine was always free from albumin. The white cell count was never above 9,500.

The Wassermann reaction was strongly positive. The temperature did not exceed 99·5°. Smears showed many typical fusiform bacilli and spirochæte.

He received treatment for Vincent's angina in form of local applications of various antiseptics. He was discharged as cured May 21st, 1918.

The severe case with involvement of tongue referred to above is worthy of special mention.

2. Mrs. G., was admitted to hospital ward about August 10th, suffering from a sloughing ulcerative condition of the mouth which was thought to be syphilitic. We were called to see the case about August 31st. The foul characteristic odour was noticeable on approaching her room. She was unable to talk. There was swelling of face, neck and tongue. Tongue protruded from her mouth which she was unable to close. She was able, however, to take liquid nourishment. A closer examination of her condition revealed extensive deep sloughing ulcers on her cheeks, lips and the tip and under surface of her tongue. These ulcers extended widely outward from the tissues in contact with the gum margins. They also extended backward from the molar teeth and spread out over both tonsils. The ulcers showed the usual characteristics of Vincent's disease. They were serpiginous in outline and did not show the punched out appearance common to syphilitic lesions. Although conforming largely to the ulcerative type of the disease, portions of the ulcers were quite superficial and resembled the diphtheroid or superficial type described by other authors[3]. They were covered with an extensive yellowish grey slough or pseudomembrane and bled freely and easily when touched. This case showed an unusually large amount of slough and necrotic tissue about the lesions. The œdema of face and tenderness of neighbouring glands was also a prominent feature. Smears showed the

typical fusiform bacilli and spirochætæ, but mixed with a number of other organisms.

The Wassermann test was strongly positive. White blood cells count was 11,800. Temperature was never above 100°. Urine showed a trace of albumin.

A noticeable feature of this case, and in fact all cases of Vincent's disease, is that pain or systemic reaction is not severe; in fact, they are both out of proportion to the extent of the lesion.

Cases placed under treatment for Vincent's disease showed marked improvement and tended to clear up in about three weeks. Other cases required longer periods of treatment as illustrated by the following cases:

3. Sergeant L., applied for admission to hospital for tonsillectomy June 4th, 1918. Smears made from a deep ulcer on tonsil showed many Vincent's organisms. He was sent to the hospital for further treatment and returned to us July 18th. Smears were negative for Vincent's organisms. Tonsillectomy July 19th, was followed by an uneventful recovery.

The most satisfactory method of treatment is that in which some form of arsenic forms an essential part. Arsenic administered internally is a valuable adjunct to local treatment, but arsenic internally without the use of vigorous local treatment *will not clear up the condition*. This is well illustrated by the following cases:

4. Mary S., admitted to dental clinic May 3rd, 1918, suffering from an infection of gum margins. A diagnosis of Vincent's was made from smears and clinical features.

She had been receiving treatment for syphilis since May, 1917, in the form of mercurials and several intravenous injections of diarsenal.

The Wassermann test had been positive. When seen by us, the affection of the gum margin was gradually becoming worse.

May 3rd. Local treatment with 10 per cent. tri-chlor-acetic solution and antiseptic solutions as mouth washes was begun. May 29th the condition had entirely cleared up.

5. Miss C., admitted to dental clinic April 23rd, 1918, suffering with a Vincent's infection of gum margins. Wassermann test was negative.

She was given two intravenous injections of diarsenal along with local treatment of gum margins.

Tri-chlor-acetic 10 per cent. solution and antiseptic washes

were used in this case also; gum margins were entirely healed and smears were negative in two weeks with the above treatment.

A number of such cases came under our notice who had been receiving treatment for syphilis in the form of diarsenal intravenously without any improvement in a concurrent Vincent's disease of the mouth. Let us emphasize that a correct understanding of the nature of the disease is the all-important factor in the treatment. If the case is mistaken for syphilis, the treatment is usually insufficient to effect a cure. A positive Wassermann test, though it bears a relationship to Vincent's disease[4] is often present, a fact that has been noticed by other writers.

Mild cases are often mistaken for pyorrhœa alveolaris[2] where smears have not been made, and here again the treatment may be unavailing. Dentists often advise extraction of teeth for such cases, but unless teeth are decayed, this is unnecessary. In Vincent's there are no pus pockets at the roots of the teeth, and proper treatment without extraction almost invariably effects a cure.

McKinstry[3] states: "In England fuso-spirachætal affections of the mouth and tonsils scarcely appear to have received the attention they deserve, for few contributions on them can be found in our journals, whilst in some of our recently published text-books they have not yet secured a place, and in others they are dismissed as if clinical rarities." He also states that English literature on the subject is almost exclusively devoted to Vincent's angina and allied ulcerations have seldom been mentioned. His statements apply with still greater force to Canadian literature. We have been unable to find any literature bearing on the frequency of Vincent's disease in the United States or Canada. Our investigations have led us to believe that Vincent's disease of the gums is more common and more often undiagnosed than Vincent's angina, and that this is by far the most common site of the primary lesions.

Vincent's disease seems to be on the increase and affect the health of our soldiers as well as civilian population. As it is a curable and communicable disease, it is of the highest importance that it should be recognized in all its manifestation.

References:

1. Taylor and McKinstry—*B. M. J.*, March 31st, 1917.
2. Greeley—*Am. Jour. of the Medical Sciences*, May, 1918.
3. McKinstry—*Practitioner*, July-Dec., 1917.
4. Taylor and McKinstry—*B. M. J.*, Jan. 19th, 1918

OFFICIAL REPORT ON INFLUENZA EPIDEMIC, 1918

THE following report on the influenza epidemic by Lieutenant-Colonel H. C. Parsons, consultant, Medicine and Laboratories, has been received from the Director-General of Medical Services, Ottawa.

The reports from the various military districts cover a period from September 19th to December 12th, 1918. During this period there were an average of 61,063 troops in Canada. The total number of cases of influenza reported was 11,496 or 19·1 per cent. of the whole. Of this number, 505 were officers and 10,991 other ranks.

There were 2,208 cases of broncho-pneumonia, or 19·2 per cent. of the total number of influenzal infections. Of these 716 died. The incidence of influenza varied greatly in the different districts, from 6·9 per cent. in one to 42·4 per cent. in another, the average being 19·1 per cent. The same may be said of the incidence of pulmonary complications; they varied from 6·6 per cent. in one to 80·4 per cent. in another.

The mortality likewise varied from 15·4 per cent. to 76 per cent.

Observations as to preventative inoculation are not as yet available, so it is impossible to discuss it in relation to the above percentages.

Reports have been received from the various district laboratories as to the bacteriological and pathological findings, under the following headings:—

1. Swabs from naso-pharnyx.
2. Bacteriology of the sputum in broncho-pneumonia.
3. Blood cultures.
4. Post-mortem reports.

The following figures represent the number of times each infection was present, either alone or associated with others:

(*a*) Swabs from naso-pharynx:

Bacillus influenzæ	87
Streptococcus	136
Pneumococcus	136
Micrococcus catarrhalis	36
Staphylococcus	30
Bacillus of Friedlander	24

The findings of the different infections varied considerably in the different areas; for example, in one area the bacillus was found in one case only. At the Polish Camp, Niagara, it was not found at all in thirty-three cases. In another instance it was found alone in fifteen out of seventy cases. In another, once in twenty-five; whereas the pneumococcus and streptococcus, or both, were always in evidence.

In Military District No. 10 the streptococcus was found in almost pure cultures in one hundred and two out of one hundred and twenty-two cases; bacillus influenzæ in eighteen; whereas in Military District No. 3, influenzæ bacillus was developed in 94 per cent. of cases, alone in fifteen cases, and alone, or associated with others, in sixty-six out of seventy cases. Whether this divergence in result occurs from variations in technique is difficult to say, but, upon enquiry, it is found that findings were equally diverse where exactly similar culture media and technique were followed.

(*b*) Bacteria in sputum from cases of bronchial pneumonia showed the following:

Bacillus influenzæ	5
Pneumococcus	79
Streptococcus	17

(*c*) We have a record of one hundred and fifty-six blood cultures from acute influenzal or pneumonial cases:

155 negatives.
1 streptococcus.

(*d*) *Cultures from the lung show:*

Bacillus influenzæ	89
Pneumococcus	44
Streptococcus	53
Staphylococcus	10
Micrococci catarrhalis	9

As far as can be ascertained from the reports, there were three cases in which the bacillus influenza was the only infectious organism. In the rest of the cases it was found associated with pneumococcus or streptococcus, or both. Some of the reports unfortunately state in broad terms that streptococcus or pneumococcus were the predominating organisms, while bacillus influenzæ was rarely seen. On one series of thirty-six cases, bacillus influenzæ was found in twenty-six, but always associated with other organisms.

Pneumococci Differentiation

Military District No. 2.

Type I.	Type II.	Type III.	Type IV.	Negative
3	11	2	4	10

Military District No. 10.

Types I, II and IV were differentiated; the number is not stated.

Post-Mortem Reports

The reports from eighty-one autopsies are available. The lung conditions were that of broncho-pneumonia or capillary bronchitis in seventy cases; lobar pneumonia in six and in five there was a combination of the two; that is, a broncho-pneumonia on the one side and lobar pneumonia on the other. The gross appearance in each condition was characteristic and does not require detailed description. When it was a lobar pneumonia, the different stages were evidenced. In broncho-pneumonia it was extensive involvement of the bronchi with a lobular distribution, of consolidation and frequently with evidence of hæmorrhage. The minute anatomy of the lung, I quote from the report of Dr. R. H. Mullin, of Military District No. 11, which agrees in the main with other reports. It is as follows:

"Microscopically, in the tissues so far examined, the lobar pneumonia appears to be the ordinary type, with all conditions usually found. There were large quantities of fibrin and polynuclear leucocytes distending the alveoli; the bronchi were also involved. In broncho-pneumonia cases the alveoli were filled and distended with red cells and polynuclear leucocytes, in some cases the distension being so great as to rupture the alveolar wall and giving the appearance of a distinct hæmorrhage. No evidence of old hæmorrhage could be found in any of the cases examined. The bronchi were invariably involved, the epithelium being almost entirely desquamated and the peribronchial tissues infiltrated with numbers of polynuclear leucocytes, the process extended outwards into the alveoli. The unaffected alveoli were considerably dilated and emphysematous, in some cases rupture of the walls having occurred.

"The spleen in most cases showed a tremendous amount of

dilation of the blood channels. In some areas, hæmorrhage had occured in the spleen pulp. The kidneys, in the involved cases, showed a cloudy swelling in the epithelium of the tubules, with some desquamation, glomerular epithelium, and exudate in Bowman's capsules."

Infection of the pleuræ was frequent. In a few instances it was a simple fibrinous pleurisy. In a majority, a hydro or pyothorax existed. In one series of thirty-six cases, 69 per cent. had fluid in the pleural cavity in either one or both sides; in 60 per cent. it was a hydrothorax and in 19 per cent. it was a pyothorax.

The bacteriology of these cases was as follows:

Bacillus influenzæ	2
Pneumococcus	13
Streptococcus	23
Staphylococcus	8
Sterile	9

There was a marked distension of the right heart. The blood showed marked hæmolysis, in many cases. The heart muscle was very friable in all cases. There is no microscopical report available on the heart muscle thus far.

Acute septic spleen was found in 47 per cent. of one series and 25 per cent. of another series.

Acute diffuse nephritis was found in 16 per cent. of one series. In other reports, a marked cloudy swelling is described in all the cases.

In one case there was an acute inflammatory condition throughout the gut.

While the bacillus influenzæ is found in the throat and the sputum in the early stages of the disease, it is rarely, if ever, found alone. The pneumococcus and streptococcus are the predominating organisms. In the pulmonary complications these later organisms are most frequently found either alone or in combination as the chief infecting agents. The bacillus of influenza seems to play a less important part.

The disease is an acute general infection, the respiratory tract being the main point of attack. As a result of the infection, the other organs, kidneys, spleen and heart muscles show great degenerative or inflammatory changes.

The term influenza would appear to be incorrectly applied to the great majority of these cases.

Editorial

BULLETIN OF THE AMERICAN COLLEGE OF SURGEONS ON HOSPITAL STANDARDIZATION. THE IMPORTANCE OF CASE RECORDS

THE American College of Surgeons cannot as yet be compared with the Royal College of Surgeons of England in those things that concern tradition and dignity, which age, combined with lofty standards, brings with it. It is a lack which time will surely remedy. But in all that concerns enthusiastic seeking after efficiency, keenness and the idealism of youth, one may say that the American institution lags not behind the older one. The forelying small pamphlet, written by J. G. Bowman, Director of the College, is an admirable brochure, and bears the stamp of that ability in organization, clarity of expression, and business-like way of setting down things, for which Bowman has already become so well known. It is a plea for efficiency in the writing and the filing of case records in hospitals, and represents one part of the very effective work, which the college has taken on itself, of elevating the standards of hospitals generally. Carping critics may say that a vast number of the American hospitals need standardizing rather badly, but on the whole criticism of that sort is certainly unfair; and in any case it is abundantly clear that the hospitals of our own country would profit largely if they were willing to follow the suggestions laid down in this pamphlet.

Mr. Bowman discusses case records under the following headings: In Relation to Hospital Success; As a Test of Medical Patriotism; Case Records in Army Hospitals; Case Records for Private Patients; As a Check upon Character of

Service; Meetings of Hospital Staff; Practical Points about Case Records.

It would take too long to describe the whole article in any proper way, but we may make one or two quotations: "The hospital creates an equation which consists of service to the sick on its own part, balanced by proportionate and practical gratitude for that service on that part of the public. The next and inevitable step is that the truth of the equation be sharply tested. Rational and convincing evidence as to the hospital's service is wanted by the public, and not general or sentimental optimism. . . . In some practical fashion it must account for efficient performance in every department. . . . . How shall the hospital make this accounting? Well, results are what count, and the results are to be found in case records. The first practical reason for the keeping of case records is that these records are a pledge of loyalty of service on the part of the hospital to its community. . . . . Emphasis has been placed upon case records as a test of medical honesty, or let us call it medical patriotism. A second and quite as significant a reason for these records lies in their use to prevent or minimize errors in all clinical practice; to serve as a direct test of efficiency." He goes on to argue in a most convincing way why there should be regular meetings of hospital staff. The argument needs no labouring, but Mr. Bowman's way of putting it is very apt and convincing. Meetings of the staff foster self criticism and discourage malicious criticism. They keep up *esprit de corps;* they eliminate a great deal of incompetency, negligence, or laziness, they help to inspire the internes and younger men, and they increase the sum of knowledge of the staff generally. It is hardly necessary to go on and describe in detail the various points set down for practical case record keeping. Suffice it to say that they are all pointed and practical. If this pamphlet could be in the hands of every house surgeon, we have no doubt that medical science would advance more rapidly than in the past.

A FEDERAL DEPARTMENT OF HEALTH

THE two great objects which this Association has struggled to accomplish have both been realized within the space of a few years. There seemed to be endless difficulties in the way of having Dominion registration for the profession, but this has been accomplished and already we have a large number who have qualified.

The speech from the throne at the opening of the present session has notified the country that the government is pledged to form a Department of Health. The details have not been announced, so naturally there is a good deal of speculation as to how seriously the important matter of health is to be treated. The older members of the Association fear that little will be done. They have brought this matter to the attention of the legislature for so long with little or no result, that they are not optimistic about the subject receiving the attention it deserves.

From all accounts the military must be given the credit of bringing the facts before the government that have resulted in this innovation. They have accomplished more by placing the venereal question before the public than the Association has from its numerous resolutions and occasional delegations.

The public, both here and in the United States, were dumb-founded at the statistics put before it of the number of men infected with these diseases. That the soldiers were actually freer from these troubles than the recruits could hardly be believed at first, but alas, it was but too true. To this fact much of the awakening in health matters is due.

In the field of venereal disease alone, there is considerable work that the federal government should be responsible for. Thousands of our soldiers have been infected with syphilis while on service. While the government cannot in anyway

be held responsible for this fact, yet it is to their advantage to make sure that these men have been entirely cured. They have all been treated under a system standardized by the military authorities. While the treatment seems to be adequate to many who have studied this subject, yet many others rightly claim that these men must be under observation for a prolonged period. The rapid demobilization, now going on, has already set loose a large number of them. There is great danger that they will spread this disease broadcast in the country districts which heretofore have been free from it. This phase of the venereal problem should be handled entirely by the federal authorities.

Owing to the lax inspection of immigrants the provinces have had unloaded on them an enormous number of mental degenerates. These have filled their jails and asylums and flooded the country with mentally deficient children.

The legacy that Manitoba has been left in this connection has just been partially disclosed to it. The provinces may well look to the federal authorities for assistance in this problem and for a radical change in the methods of selecting immigrants.

There are always difficulties in the way of the federal government doing work along similar lines to the provinces. This has been especially noticeable as regards agriculture. If there is necessity for dual work in this basic industry is it not much more necessary to conserve the health of the people concerned? All diseases which afflict people able to travel and to spread the infection from province to province must be of interest to the central authority. It is not just that the provinces, who adequately protect the health of their people, should have the diseased of a neighbouring province thrust on them without compensation from some quarter. This can only be prevented by adequate assistance and representations to the provinces concerned.

It is not desirable that the health work of the central and provincial authorities should overlap, as it will surely

do unless the proper men are put in charge of the work in Ottawa. There are many specially trained officers in the Medical Corps who have shown great aptitude in health work. These should be picked, not from their rank, but entirely from the initiative shown and original work done while overseas.

The recent appropriation of twenty-five million dollars for housing purposes brings the federal government in contact with this important health matter. Much good may be accomplished if this subject is gone into more thoroughly and funds provided for finding a solution of the slum question as it affects our cities.

Lack of space forbids even touching on many other problems that are extremely urgent and the responsibility for which may well be placed on a central authority in Ottawa.

HOUSE OF COMMONS MEDICAL COMMITTEE

A MEDICAL committee has been formed in England to include all medical members and other members of the House of Commons interested in scientific matters. All medical members except the Ministers have joined this committee under the chairmanship of the distinguished surgeon, Sir Watson Cheyne. The objects of the committee are to exchange opinions so as to secure representation of agreed views on medical subjects in Parliament. The committee is open to receive representations on all such matters from the colleges and corporations, and from societies and associations, and will hold conferences when considered desirable. It will not allow itself to be identified with anyone particular body.

While the need for similar action is not at present as acute in Canada as in England, yet it would be an excellent idea for the medical men in the federal and provincial parliaments to adopt a similar course. The exploiting of the medical

profession to secure votes has not yet been begun in Canada, but this will start sooner or later—probably sooner than most doctors imagine. The profession in England was caught unprepared so had to quickly succumb when they received the ultimatum from the government in the form of the Insurance Act and more recently in Dr. Addison's new bill outlining the duties of the Ministry of Health.

Medical members of Parliament must primarily represent their constituencies but there is no reason why they should not secondarily be united to uphold the best interests of the profession. This would be the most effective way of dealing with the quack healers and partially-trained pseudo-specialists who are continually asking for special legislation for themselves.

THE FREE PUBLIC HOSPITAL MOVEMENT

A VERY strong movement for free public hospitals, especially for the rural districts, has been sweeping the West. There has been an increasing demand that provincial governments assume a greater measure of responsibility for public health. This has, no doubt, been brought about by what has been accomplished by the military medical departments. It is urged that if a complete medical and hospital service can so improve conditions among the soldiers, an equally complete service for civilians would have the same result.

Each of the prairie provinces, in response to this agitation, has enacted legislation. Saskatchewan and Alberta have passed Hospital acts providing for public hospitals to be controlled and financed by the taxpayers of the districts which they serve. The Alberta act is considered the most advanced measure enacted anywhere in Canada. It recognizes more fully than the Saskatchewan act the primary responsibility of the government, and provides a scheme of organization closely paralleling that for education, in which the government assumes the initiative in all organizations.

The Alberta act lays the foundation for a system of hospitals as complete and gratuitous as the public schools. It is based on the principle of the direct responsibility of the state for maintaining the health of each and every citizen. The office of minister of municipal affairs is combined with health matters. Alberta has paved the way for a revolution of the present methods of safe-guarding health; it provides the minister of health with adequate machinery to carry out a progressive democratic policy for complete nationalization of health within the boundaries of the province.

The act provides for alternate initiative by the minister and the ratepayers. This prevents action by the government before the ratepayers of a given district are ready for action, but gives the minister full general supervision over the administration by the local boards of each district. The minister establishes the districts; the ratepayers, by petition, set the machinery of the act in motion; the district board then assumes the executive, establishing a hospital having the benefit of provincial architects, provincial medical staff to advise them as to plans, costs, etc., and the scheme is submitted to the minister before being submitted to the ratepayers. Individual ratepayers have access to the Board of Public Utility Commissioners for redress for a wronged minority. These commissioners also adjudicate on disputes as to site when the various sections of the district fail to agree. Formerly many municipalities had endeavoured to combine by mutual agreement to form hospital districts, but, with the exception of Lloydminister, the plan failed owing to dispute over sites, the inertia of one municipal council or the hostility of another. By the present act it is believed Alberta will be much better served, as many local improvement districts would have been left isolated owing to financial inability to participate in the organization of the district to which it naturally belonged. The Alberta act differs from the Saskatchewan act in that the latter does not provide for such extensive government initiative. While

the Saskatchewan act permits municipalities to unite to form hospital districts, the Alberta act provides that the government shall lay out suitable districts without regard for municipal boundaries and having regard only for the necessities of the hospital. It is designed to enable the government to progress in line with the progress of public opinion, and it leaves to public or voluntary initiative only as much as is absolutely necessary to preserve local autonomy.

THE British doctors are organizing a union to safeguard the interests of the profession. According to recent press despatches, in view of the impending establishment of the Ministry of Health and its consequent effect on the medical profession, a mass meeting of London physicians, both men and women, was held, and by a vote of 207 to 30 passed a resolution favouring the immediate organization of the profession on a trade union basis. As the meeting was distinctly representative of the profession, the formation of a Medical Union is looked for immediately. Twenty thousand members are expected to join the union. An amendment urging that the Medical Union join the Trade Union Congress, which has become regularly affiliated with the Labour party, was rejected by a large majority.

A BILL, under study to allow the legal practice of Osteopathy, and recently submitted to the Quebec Legislature, has been thrown out in committee. The stand taken by the medical profession was that osteopaths should qualify under the same conditions necessary to all specialists to obtain legal recognition.

The Association

THE QUEBEC MEETING

PREPARATIONS for the annual meeting of the Association in Quebec, June 25th, 26th, and 27th, are being carried on energetically, and everything points to a most successful gathering.

We have been most fortunate in obtaining the consent of Dr. J. Halpenny, of Winnipeg, to give the Address in Surgery. Dr. Halpenny's work is well known to the profession in Canada and elsewhere, and we feel certain that this announcement will be received with enthusiasm by our readers.

The Addresses in Medicine and Public Health will be given by leading members of the profession.

A goodly number of papers have been secured for the different sections. Those who will contribute include, for the medical section, Dr. Christian, of Boston; Drs. H. B. Anderson, Malcolm McCullough, and Fletcher McPhedran, of Toronto; Dr. James Third, of Kingston; Drs. Finley, Hamilton, Gordon, G. G. Campbell, Meakins, and Cushing, of Montreal. For the surgical section: Dr. E. L. Garner, Fernie, B.C.; and Drs. Armstrong, Garrow, Eberts, Powell, Turner, and Gurd, of Montreal. Although we cannot yet announce the names of the contributors to the section of obstetrics and gynæcology, the fact that Dr. W. W. Chipman, of Montreal, is looking after the welfare of that section, is a guarantee that there will be plenty of good material. Dr. Pagé, of Quebec, is chairman of the section of public health and is getting together a most interesting programme.

We would like again to urge our members to forward without delay to the General Secretary, 836 University Street, Montreal, the title of any paper they wish to contribute, as it is intended to publish a more detailed programme in our next issue

Obituary

LIEUTENANT-COLONEL WILLIAM JOHN OGILVIE MALLOCH, C.A.M.C.

Lieutenant-Colonel William J. O. Malloch, C.A.M.C., passed away at his home in Toronto, February 18th, having contracted pneumonia only ten days after his return home, to which he finally succumbed.

Colonel Malloch was born in Clinton, Ontario, about forty-seven years ago, of Scottish parentage. At the age of sixteen he entered the University of Toronto, graduating in arts in 1892 and in medicine in 1896. He was devoted to research work, particularly in anatomy and physiology, and in 1905 went to England where he took a fellowship in the Royal College of Surgeons in the following year. In 1908 he was appointed assistant surgeon on the staff of the General Hospital, and at the same time was appointed to the teaching staff of the Toronto University. In 1915, Colonel Malloch left for England with the University Base Hospital, No. 4; this unit was ordered to Saloniki, and from thence he was attached for a time to a British casualty station up the line in the Serbian army. He returned to England some time before his unit and was attached as chief surgeon to the Ontario Government Hospital at Orpington. When the University Base Hospital returned from Saloniki it was stationed at Basingstoke and Colonel Malloch rejoined his unit, where he remained as Surgeon in charge until he returned to Toronto.

Colonel Malloch was a Presbyterian, a member of the Masonic order, and of the University and Albany Clubs. The funeral took place with full military honours, the Faculty of Medicine attending in a body. He is survived by his wife.

Colonel Malloch was a man universally beloved, specially endowed with scholarly gifts, both in his profession and other branches of learning. He was recognized as a most asute diagnostician. His eminence as a surgeon was also widely recognized. He always took a great interest in athletics, and was devoted to

manly sports of all kinds. He was a man who had the somewhat unique gift of making friends and his kindly and genial nature responded to every call made upon him, either professionally or in a personal way. To those in trouble he always showed his great heart, and to the poor he gave his best services.

DR. HENRY MONTGOMERY

By the death of Dr. Henry Montgomery, which occurred at Painesville, Ohio, on February 21st, the University of Toronto loses a distinguished alumnus and a former member of its staff. To his degree of B.A., in 1876 and of M.A. in 1877, he added that of B.Sc. at Victoria in 1880, with those of Ph.B. in 1887 and Ph.D. in 1903 at the Wesleyan University, Illinois. Going to the United States he was for ten years a professor successively in the University of North Dakota and the University of Utah. In 1894, he returned to Toronto as head of the scientific department of Trinity University, transferring to the University of Toronto on Trinity's federation with that university. He held the responsible position of curator of the scientific collections till 1912, when he retired. Before so doing he helped to design and plan the Museum building. He was a charter member of the American Association for the Advancement of Science and the American Association of Museums. His publications, which were numerous, related to mineralogy, geology and archæology. He did very valuable work in the way of opening up some of the earth mounds in Manitoba, not to speak of similar operations in Ontario and in several States of the Union. He was recognized as an expert on mining properties.

For the last three years Dr. Montgomery had been living in Painesville, Ohio, to be near his relations, as his health, which had never been robust, was far from satisfactory. Even so, he busied himself with efforts to counteract German propaganda, a line of activity he was well fitted to pursue successfully. From an attack of pneumonia, from which he suffered a year ago, he never completely recovered. He is survived by one son.

DR. HENRY CHIPMAN

Dr. Henry Chipman, of Grand Pré, a leader and worker in every good cause, a personal force in every movement that tended to the betterment of the community, died on January 18th, in his seventy-fifth year. He began his medical practice at Grand Pré where, for nearly half a century, he has laboured, sparing

neither time nor strength, in the interests of the people who loved him devotedly. Since the outbreak of influenza in the early autumn he had been kept continually busy, with little chance to think of his personal comfort or safety. To a man of his years the work was too strenuous; five days before his death he was compelled to give up, worn out in the service of others. Pneumonia developed, and then the end came.

Dr. Chipman was the son of the late W. H. Chipman, M.P., and was born at the old homestead, Chipman Corner, near Kentville, on November 25th, 1844. He went to King's for his arts course, but received his medical degree at Harvard University, the late Dr. Oliver Wendell Holmes being one of the professors of whom he often spoke with highest admiration. When Dr. Chipman began his practice at Grand Pré, which became his life work, his constituency was a wide one, extending rrom Hantsport to Wolfville, east and west, and miles of surrounding country. Often through blinding sleet and driving storm were his ministrations carried on. Though indefatigable as a medical practitioner he was more than a physician, the trusted friend and adviser of all who needed him. He was prominent in every interest in the community, the Church, the Societies, the King's County Temperance Alliance, all received his unwavering support.

At his funeral the church was filled to the doors; the service being conducted by the pastors of neighbouring districts anxious to show their appreciation of his splendid character. The choir was composed of male voices, representatives of different sections of his field of practice. Dr. Chipman leaves a widow, and a surviving son and daughter to whom the deepest sympathy is extended throughout the entire valley. The influence of his kindly, unselfish, beautiful life will last for many a long day in the community.

DR. PATRICK ROBERTSON INCHES

One of St. John's best known physicians passed away recently in the person of Dr. P. Robertson Inches; he was eighty-four years of age and had had a long and honourable career. Although born and educated in the province, he studied at the New York University in 1866; he then became resident physician in the Maternity Hospital, Edinburgh, 1867, and M.R.C.S., London, 1868. He also took courses and degrees from Rome, Paris and Vienna.

He leaves two daughters and four sons, three of whom have enlisted in the Canadian army and seen service overseas.

Dr. H. A. Mignault, a veteran physician of the Province of Quebec, died recently in his eightieth year. He graduated at McGill University in 1858. He was a visitor of the Hotel Dieu, Montreal, for many years and also one of the leaders of the Provincial Board of Health.

Dr. C. J. Gossip died at Halifax, on February 13th, at the age of eighty-two. He was very well known and esteemed both as practitioner and citizen; he practised at Dartmouth for twenty years. He spent the latter part of his life in Halifax being connected with the Halifax Dispensary, to which institution he rendered valuable service.

Dr. James B. Auston died on January 12th, at the age of thirty-five. He graduated in medicine from McGill University in 1906. While working overtime, caring for his influenza patients, he had a bad fall on his own doorstep; pneumonia soon developed and he died after a short illness.

The death of Dr. Louis Edouard Desjardins, eye specialist, occurred recently, after a long illness. He was in his eighty-second year. He was born in Terrebonne in 1837, and took his medical course at Victoria College, afterwards studying in London and Paris. Later he became a professor at his alma mater and Laval.

In the death of Dr. Samuel Wesley Burns, one of the oldest and best known physicians in Nova Scotia, Shelburne sustains a severe loss, where he has been in continuous and successful practice since 1864, save for a few years spent in Milton, Queen's County. Dr. Burns was eighty-two years of age.

Miscellany

News

THE WESTERN PROVINCES

A series of public meetings have been planned throughout the various school districts to supplement the work of the public health nurse, to arouse interest in this important activity in citizens and officials alike, and to spread the leaven of health education. The history of the new venture is brief, the movement having begun in 1916 with four nurses, which number was increased in 1917 to ten or twelve, and in 1918 to about eighteen. Fifty would be needed to properly cover the ground. Under the Board of Health this year seventeen nurses are working as follows: Two in Assiniboia, two in Brandon, two in Dauphin, one for the town and one for the rural municipality, two in Portage la Prairie, one town again and one rural; one in Westbourne, one for Carman, Dufferin and Roland together, with a French-speaking assistant, one for the combined municipalities of Macdonald and Grey, one at Roblin, one at Rockwood, three in training and one public service nurse at Minitonas.

The public health nurse does no actual nursing except to give first aid. The public service nurse does visiting nursing, like that of the Margaret Scott nurses in Winnipeg, over an area of some twenty miles. The provincial government, the municipality and the school districts each pay one-third of the salary of these nurses. Thirty or forty schools come under their inspection in addition to numerous home visits which have to be paid. The aim is to secure for every school child an examination to determine physical fitness and, whenever that is lacking, to suggest to parent and child means to achieve it. The work of education goes on constantly and incidentally between school and home as a consequence of these visits; an Honour Club is established among the children not to keep any sickness a secret; the mothers are helped with hints about safe-guarding young life, and prevention and the golden rule of quarantine are taught effectively.

The request for a public health nurse must come from a municipality and is usually preceded by a scout who has been doing educative and illustrative work. A "scout" is a nurse not located in any permanent field, but one who gathers information, gives it, and brings to widely scattered parts of the province such a knowledge of the character of the nurse's work that the people frequently desire a nurse for a more definite period.

Dr. Stuart M. Fraser, provincial health officer, has announced that next spring he intends having the compulsory vaccination law existent in Manitoba rigorously enforced. He anticipated no immediate danger from a new epidemic, but said it was part of the department's spring plan of campaign to see that every individual in the province was as adequately safe-guarded against this disease as science made possible

A home for the deaf and dumb, to cost approximately $500,000, has been decided on by the Manitoba Government and was recently announced by Hon. George A. Grierson, minister of public works. The Home will be located in Winnipeg or closely adjacent to the city. The government has adopted a unique plan to secure the most efficient and up-to-date building. Five leading architects, have been asked to supply plans, in which will be embodied the latest ideas for deaf and dumb institutions. These five plans will be purchased outright by the government and the best ideas adopted.

The provincial government of Alberta has undertaken to provide proper medical and nursing care for unorganized fringes of settlement which it is impossible to organize into hospital districts for some time to come, and has set apart $25,000 to settle returned army medical men, or other doctors, in these places, and to pay them bonuses which will enable them to carry on; they also gave a grant of $5,000 to the Victorian Order of Nurses this year. The purpose of the grant was to enable the Order to pursue its work over a larger area. The foregoing announcements were made by the Hon. J. G. MacKay before the convention of the Alberta Association of Local Improvement Districts and Rural Municipalities. He also held up before the convention the ideal of the public school free system for hospitals as well as schools, and urged them to approach this as nearly as possible in their local schemes. He outlined proposed amendments to the

Hospital Act, which will be brought up before the legislature this session, bringing cities under the act and so linking up the larger city hospital facilities. He referred to boundary disputes and said the department proposed to effect drastic readjustments in Mannville and Drumheller to satisfy dissatisfied townships. In future no boundaries would be approved until the minister's advisers had gone thoroughly over the territory and canvassed every township. Referring to the problem of tuberculosis, he said that the provision of sanitariums would be costly, but the government had made a start in the Bowness institution. To give proper care to the feeble-minded, such as was being done in certain states, would require an initial outlay of half a million dollars. The health estimates of the province would shortly have to be increased to ten times the present sum for general work. Mr. MacKay summarized the work in the influenza epidemic and congratulated local agents on their success. The government, he announced, had agreed to pay the city of Medicine Hat for the care of 232 country cases. That city had taken care of 484 cases at a cost of $20,000. He estimated that the total cost of the influenza epidemic to the government would be about $70,000.

Alberta will have the additional accommodation it asked for at the sanitarium to be built by the Dominion and Provincial governments near Calgary. A telegram to this effect has been received from Sir James Lougheed, at Ottawa, stating that the federal government would grant the extra appropriation of $60,000 which would be necessary to build an addition providing room for another seventy-five civilian patients. The total expenditure will be $460,000, of which the Dominion government will pay $260,000, and the province, $200,000, the entire plant to become the latter's property after five years.

In the budget speech in the Legislative Assembly at Regina, the Hon. C. A. Dunning outlined certain provisions. He advocated an expenditure of $6,728,000 on capital account. Among the principal items are $100,000 to commence a war memorial building at Regina; $250,000 for a hospital for the insane to be located at some point in the southern part of the province; $155,000 for additional buildings at the provincial hospital at Battleford.

Prince Albert has adopted a resolution favouring the appointment of community doctors and nurses, and is asking other

municipal bodies to join with it in a petition to the legislature in connection with the project. The recent influenza epidemic experience has led to the conviction that such a system is imperative in this country.

THE Saskatchewan act respecting hospitals was amended during a recent session of the legislature in several important particulars, although the main provisions of the original act are retained in the present measure. Such amendments as were introduced were either suggested by the light of experience during the past year, or as the result of recommendations made by the municipalities concerned.

The old act stated that any two or more municipalities might co-operate in the establishment and maintenance of hospitals, a provision which made it possible for a small village and a rural municipality to undertake this burden. The amended act specifically states "that any two or more rural municipalities may co-operate with any number of urban municipalities" for such purpose, and is doubtless an improvement. The hospital board, having been appointed by the various councils, the amended act sets forth very clearly the duties and responsibilities of this board, together with the method of appointment and tenure of office by its members. As in the original measure, the amended act makes provision for a levy up to two mills on the dollar for hospital purposes.

DR. M. M. SEYMOUR, provincial commissioner of public health, in a statement issued recently at Regina warned the people of Saskatchewan to inoculate themselves against typhoid germs; he declared that every precaution should be taken to prevent an epidemic of typhoid fever; the surest preventative was inoculation with typhoid vaccine. This is provided free of charge to the physicians throughout Saskatchewan. Dr. Seymour pointed out that this measure had proved so successful in the army the civil population might well emulate the example so forcibly demonstrated lately among the soldiers. He quoted the vital statistics for the month of November and the deaths occurring from typhoid fever and added that with the advent of a large number of strangers to Saskatchewan there was more or less likelihood of the spread of typhoid germs.

THE final passage of the bill providing for the prevention and

control of venereal diseases resulted at the evening session of the Saskatchewan legislature, January 30th. A suggestion of the relaxation of some of the more stringent clauses, for the benefit of residents of the outlying portions of the province where medical assistance is unobtainable, did not meet with the approval of the assembly.

As a result of Dr. Robert Oliver's trip to the Delta District for the purpose of inspection, an Order-in-Council was passed by the provincial executive invoking the Spanish influenza inhibitory regulations for the second time during three months. After a quiescent period Dr. Oliver states that the epidemic has broken out afresh and has already reached alarming proportions. The medical health officer had recommended the reopening of the emergency hospital, but the municipal board of health had to abandon the proposal on account of its inability to obtain a nursing staff.

Dr. Knox, the medical health officer of the Kelowna district states that he has received an advice from the provincial board of health that smallpox is occurring on the Atlantic coast and at some of the southern ports on the Pacific coast, twenty-seven cases having been reported in Seattle. In view of the possibility of the disease appearing in British Columbia, the board earnestly recommends all precautionary measures being taken, especially with regard to children. Dr. Knox says vaccination should at once be attended to by the family physician; more especially as the province is a seaboard and at the end of the transcontinental roads, which makes it peculiarly exposed to the danger of the importation of the disease.

Figures compiled by the provincial Department of Health show that the influenza epidemic in British Columbia claimed 2,014 during the months of October, November and December. This total has been increased since the beginning of the year owing to the recurrence of the epidemic, but as the returns are submitted by the registrars monthly, there are no figures available, except those up to the end of December. The figures given do not include any deaths that were not certified to as from "influenza" or "pneumonia following influenza". Other forms of pneumonia are not included The returns were made out according to the registration districts into which the province is divided - Victoria,

Nanaimo, Vancouver, New Westminster, Ashcroft, Fairview, Alberni, Beaton. The percentage which the deaths from influenza, or from pneumonia following influenza, bore to the total deaths from all causes was 43·05.

At the recent annual meeting of the Vancouver General Hospital, the report presented by the superintendent, Dr. M. T. MacEachren, announced a total of 13,375 patients treated during the past year. There were 887 deaths, a death rate of 6·3, which was not regarded as high when the high rate from influenza was considered. On one day alone, October 25th, 1,304 patients were undergoing treatment at the institution.

The report of the annual meeting of the Chilliwack Hospital showed the year 1918 to have improved upon 1917, which held the record for activity. The comparison shows the number of hospital days last year to have been 4,244 as against 3,694; and the income of 1917 $9,181,04 was increased in 1918 to $10,861.63. Extensive additions are to be made to the Esquimalt Military Hospital. It is planned to double the accommodation to include 260 more patients; the hydro-therapeutic establishment is to be greatly enlarged, and to the right and left two large ward buildings are to be erected capable of containing upwards of ninety beds. A new heating system is being installed.

ARMY MEDICAL SERVICES

The Distinguished Service Order has been awarded to Lieutenant-Colonel Stanley Paulin, C.A.M.C.; and to Major Orvill Ellcette (Dental), C.A.M.C.

The Bar to the Military Cross has been awarded to Captain Franklin Dunham, C.A.M.C.; Captain L. Palmer, C.A.M.C.; Captain Joseph Shaw, C.A.M.C.; and Captain Donald Turnbull, C.A.M.C.

Nursing Sister Helen McMurrich has received the decoration of the Croix de Guerre, with star. She was attached to the Montreal General Hospital before she went to France in 1914 as nursing sister with the French army.

Major Brefney O'Reilly, C.A.M.C., has been awarded the

decoration of the Order of the British Empire. Dr. O'Reilly joined the staff of the Military Hospitals Commissions in Toronto in December, 1915, with the rank of lieutenant; he was promoted to the rank of captain in 1916, and major in 1918. He was attached to the Royal Flying Corps in 1917 and became senior M.O. of the corps in 1918.

A HOSPITAL is to be erected by the English-speaking Catholics of Montreal in memory of those who made the supreme sacrifice in the great war. It will be conducted by the English Sisters of the Hotel Dieu, and will, it is estimated, cost within the neighbourhood of $500,000. Although no publicity has, as yet, been given the movement, $50,000 has already been subscribed.

THE Canadian Red Cross Society is applying to Parliament for an amendment of its Charter, whereby it will be permitted to extend its work in the case of national calamity, epidemic and emergencies in time of peace. In addition the government has asked the society to undertake special work in connection with soldiers' dependents now returning to Canada, and to continue this work during the period of demobilization.

Appointments (Canada):—Major Thomas Lowell Butters is detailed to perform the duties, temporarily, of D.A.D.M.S., military district No. 2.

Major (acting Lieutenant-Colonel) William George Turner is posted for duty as Officer in Charge, Orthopædic Surgery, in Ste. Anne de Bellevue Military Hospital.

Captain Andrew Pritchard McKinnon is posted for duty under the A.D.M.S., military distict No. 10.

Lieutenant-Colonel Edward Cooper Cole is posted for duty as Officer Commanding Convalescent Hospital, military district No. 2.

Lieutenant-Colonel Ethelbert Browne Hardy, D.S.O., is posted for duty as Officer Commanding St. Andrew's Military Hospital, vice Major T. D. Archibald.

Major Benjamin Leslie Guyatt is posted for duty as Officer Commanding Base Hospital, Toronto, vice Lieutenant-Colonel E. B. Hardy.

Major John George Brown to be Lieutenant-Colonel while employed as Officer in Charge of Medicine, Ste. Anne de Bellevue Military Hospital.

Captain Roswell Park is posted for duty under the A.D.M.S., military district No. 4, from military district No. 2.

Captain (acting Major) Hamish Henry McIntosh is posted for duty as Officer in Charge of *X*-ray work at the Esquimalt Military Hospital, and to retain the acting rank of Major whilst so employed.

Captain Herbert Leo Sims (A.M.C.) is posted for duty at the Water Street Hospital, Ottawa.

Captain Roy Hindley Thomas, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Major George Greer is posted for duty in the office of the Director-General of Medical Services, Ottawa.

Lieutenant-Colonel John Morris Nettleton is posted for duty as acting A.D.M.S., military district No. 12.

Promotions:—Captain Robert Hugh Arthur, to be Major.

Lieutenant Jacob Rosenbaum, to be Captain.

To be acting Lieutenant-Colonels:—Majors, Charles McMane, John William McIntosh, Charles Woollard, Angus William McPherson, Harold E. Ridewood.

To be acting Majors:—Captains Michael James Carney, Almon Andrew Fletcher, Samuel Ross deL. Hewitt, George Alexander Campbell, John Henry Birch, Edward Kirkpatrick McLellan, John Johnston, Alfred Chatwin Scott, Daniel Rolston Dunlop, George H. Manchester, George Chester Lawson, Seymour Traynor, Thomas Albert Watterson, Thomas John Simpson, Gerald Shaw Willliams, George Arlington Brown, Charles E. McMehan, Ernest Fielen Nivin, John V. Williams, M.C., William Baillie, Harry Morell, Gordon Wilson Armstrong, D.S.O., Horatio Fitzroy Chisholm.

To be Captains:—Lieutenants Evelyn Edwin Robbins, William John Cochrane, Floyd Cecil Stewart.

Returned from Overseas:—Captain Thomas Alphonsus Lebetter, Captain T. W. Walker, Captain P. H. McNulty, Captain Edwin James Ferg, Captain A. H. Wallace, Captain L. A. Roy, Honorary Lieutenant-Colonel D. Law, Captain John Neil MacLean, Captain H. MacDonald, Captain Andrew Pritchard McKinnon, Captain Thomas C. Campbell, Captain Edward Hiram Freeman, Major Herbert Alger, Captain George Frederick Laing, Lieutenant-Colonel David Alexander Whitton, Major Herbert William Wadge, Captain Emmet Andrew McCusker, Lieutenant-

Colonel W. J. O. Malloch, Major Robert Frederick Flegg, Major Frederick George Logie, Major H. L. Jackes, Captain D. S. Johnstone, Captain W. Goldie, Captain Esau A. Greenspon, Major George G. Greer, Captain C. F. Dunfield, Major S. M. Fisher, Captain E. C. Whitehouse, Major Thomas Logan Towers, Colonel H. R. Gasgrain, Major C. A. McDiarmid.

CASUALTIES

Died on Active Service:

Nursing Sister A. E. Dussault, Montreal.
Nursing Sister M. K. Follett, Wards Brook, Nova Scotia.
Captain T. A. Girling, C.A.M.C., Victoria, British Columbia.
Captain W. T. Hackett, C.A.M.C., Winnipeg.
Captain A. V. Leonard, C.A.M.C., Toronto.
Lieutenant-Colonel T. H. MacDonald, C.A.M.C., Antigonish, Nova Scotia.
Temporary-Colonel W. J. O. Malloch, C.A.M.C., Toronto.
Nursing Sister J. M. McDiarmid, Ashton, Ontario.
Nursing Sister Rena McLean, Souris, Prince Edward Island.
Nursing Sister M. B. Sampson, Duntroon, Ontario.
Nursing Sister A. I. Stamers, St. John, New Brunswick.
Nursing Sister J. Templeman, Ottawa.

Welfare workers have under consideration the project of uniting all charitable organizations in one federation and carrying on their work through an appeal, once a year, for financial aid to hospitals and charitable institutions, which, on this footing, they believe would receive a better support. Last year, the president of the Rotary Club conferred with the Board of Control and the Social Service Commission in regard to the adoption of the plan, but nothing definite has yet been decided. American cities, in increasing numbers, are adopting this means of carrying on charitable work. Close co-operation, the prevention of overlapping, and the elimination of a number of appeals on behalf of various institutions are avoided under the plan, and the fact that an individual charity is a member of the federation is a guarantee that the institution is carrying on a definite work.

Book Reviews

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.B., assisted by ROY G. PEARCE, B.A., M.D., and others. Price, $7.50. 903 pages with 233 illustrations, including 11 plates in colours. Publishers: C. V. Mosby Company, St. Louis, 1918.

With the publication of "Physiology and Biochemistry in Modern Medicine" (MacLeod) we have the appearance of a book with a new point of view—a point of view which recognizes the gap that has existed between the study of physiology and of clinical medicine. Undoubtedly almost every teacher of physiology and of physiological chemistry has realized the difficulties attendant upon an attempt to enable the student to carry to his practical work in medicine the fundamental facts with regard to the functioning of the organism that have been brought to his attention. At the time the student is acquiring his knowledge of physiology he is not able to appreciate its bearing upon the study and work in clinical medicine that is to follow. Later on, when he enters upon the study of the practice of medicine, or still later, when he is going about his daily work as a medical practitioner, he has lost the habit of thinking physiologically. The present volume makes the attempt—and a very excellent attempt it is—to bridge this gap. It presents clearly and concisely the essential facts of the physiology and chemistry of the human organism with their relation to medical practice. It has been said that the study of physiology is a circle that can be broken into at any point, but deeper thought will lead one to question this statement; it would seem rather that the natural gateways to a study of this subject are consideration of the alimentary system, or of the circulatory system by whose means nutriment is introduced into the organism and distributed to all its parts. Professor MacLeod elects to begin with the blood and its circulation and to follow this with a discussion of respiration, digestion, excretion of urine, metabolism, the endocrine organs and the central nervous system. In this way a complete conception is built up by logical sequence. There are, however, certain parts of the science, particularly the physiology of the special senses and of reproduction, for which applica-

tion in the general field of medicine and surgery is limited, and these parts have been omitted entirely. This somewhat arbitrary selection is justified by the fact that the ordinary text in physiology covers these subjects sufficiently, except for the specialist, for whom, on the other hand, no adequate review would have been possible within the limits of such a volume as this. Particular attention is paid to the far-reaching application of biochemical knowledge in the elucidation of many obscure problems of clinical medicine, such as those of diabetes, nephritis, acidosis, goitre and myxedæma. The arrangement of the bibliography is also worthy of commendation. The references contained in the text of each main division are grouped at the end of the section and in this way made readily available. Several chapters have been contributed by R. G. Pearce, those on the excretion of urine being particularly noteworthy. The book can not fail to be of value to the student of physiology, but makes an especial appeal to one who is engaged in the study and practice of medicine.

THE DISEASES OF INFANCY AND CHILDHOOD. Designed for the use of students and practitioners of medicine. By HENRY KOPLIK, M.D., attending pediatrist to the Mount Sinai Hospital. Fourth edition, revised and enlarged. 928 pages with 239 engravings. Price, $6.00. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1918.

The well-known standing of the author and the fact that the work has reached a fourth edition compel a careful review of this book. It is intended for both student and practitioner. For the latter it is a splendid book and for the enthusiastic student who wishes to get to the bottom of the cases he sees in his daily clinics it is very welcome.

The problems of infant feeding are handled in a very conservative manner, so as to enable the general practitioner to steer a middle course between the various extremes advocated by most pediatrists.

The chapters on the infectious diseases are revised and brought up-to-date. In these chapters, as well as those on syphilis and tuberculosis, much that is controversial has been either omitted or only given the briefest mention.

The author is to be commended on his choice of illustrations. These have been mostly taken from his own cases. Instead of filling the book with pictures of so-called typical cases, but which

are so far advanced as to be seldom seen, he has attempted to show things of distinct value to the practitioner who has not had special training in a children's hospital.

THE WAR STORY OF THE C.A.M.C., 1914-1915. By COLONEL J. G. ADAMI, M.D., F.R.S., C.A.M.C. Published by Colons, Limited, and the Rolls House Publishing Co., Ltd., London, England, 1919.

The Canadian Army Medical Corps is indeed fortunate to have been able to secure Colonel Adami for this work. Undoubtedly he has a most facile pen which he has used to special advantage in sketching the work of the Corps to the fall of 1915. This book, although accurate in all its details, has been written in such an easy style that the author commands the attention and interest of the general public as well as the medical fraternity. To all of those who have assisted in the making of War Diaries during the War, Colonel Adami's success in creating such an interesting book from the dull mass of details which fill most of them, is indeed a marvel. He has evidently secured enough purple patches from interviews with the participants in the engagements to give the whole volume a warmth of colour that was not to be expected from the material placed at his disposal, and this elicits our warmest congratulations.

This work is really a history of the activites of the 1st Canadian Contingent from the time of its assembly at Valcartier in August, 1914, until it was joined by the 2nd Division in September, 1915. There is first a brief sketch of the evolution of the C.A.M.C. prior to the War. This part of the work is especially instructive to most Canadians. The Army Medical Corps was little known to the profession. The Militia was looked on as a hobby of some enthusiasts similar to the golf or curling club. The permanent Army Medical Corps was considered a morgue for doctors who had lost interest in the profession. Yet the excellent organizing work done by the Corps for several years before the War bore abundant fruit when hostilities began. The public is much indebted to Colonel Adami for bringing this information to its attention. So many of the Canadian doctors have since served with it, either in Canada or Overseas, that the history of its early troubles makes a distinct appeal.

The early trials at Valcartier, due to the lack of system, to be expected in such a rapid mobilization, are hastily run over. From

the medical view point, the principal difficulties were the documentation of such a large body of men and the sanitary arrangements of the new camp, which grew up almost over night. From here the reader is taken to view the mighty Armada that took them overseas. Their stay at Salisbury Plain and the meningitis epidemic is then dwelt on. Even Colonel Adami's pen fails before a description of the mud and privations put up with here.

Under the title "With the B. E. F. in France", the absorption of the 1st Division into the British Army is shown. Here the reader is given a clear insight into the method of the passing of the wounded soldier from the place where he falls until he reaches "Blighty", should his wound be serious enough to prevent his early return to duty.

Nearly a hundred pages are devoted to the second battle of Ypres. Here, Colonel Adami is seen at his best in making such an interesting narrative, by moulding the different accounts of dozens of the participants into a composite whole. With delightful ease he outlines the heroic work performed by the different medical officers, such as Scrimger and Hart, as well as the different ambulance units in these terrible days when, for the first time, soldiers had to endure the action of poisonous gases.

Short accounts of Festubert, Givenchy, and "Plugstreet" complete the history of the service rendered by the C.A.M.C. in the treatment of the soldiers at the front.

In the concluding pages short sketches of the hospital units of the First Contingent are given. Their work, while not as thrilling to read about as that of the units taking part in these engagements, nevertheless was equally necessary and showed an equal efficiency. These hospitals compare with all other units of the kind just as favourably as our Canadian Corps did, with all units of its kind fighting in France. We are looking forward to the next volume in which Colonel Adami has promised to give this portion of the work of the C.A.M.C. the attention which it deserves.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknolwledged. Reviews will be made from time to time of books selected from those which have been received.

ADVANCED SUGGESTION (Neuroinduction). By HAYDN BROWN, L.R.C.P., Fellow of the Royal Society of Medicine. 342 pages. Price, 7/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London, 1918.

PHYSICAL AND OCCUPATIONAL RE-EDUCATION OF THE MAIMED. By JEAN CAMUS, and others. Authorized translation by W. F. CASTLE, surgeon, R.N. With articles on British institutions by SIR ARTHUR PEARSON, Bart., and others. 195 pages. Price, 5/-net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London, 1918.

PRINCIPLES OF BACTERIOLOGY. By ARTHUR A. EISENBERG, A.B., M.D., director of laboratories, St. Vincent's Charity Hospital. 198 pages, illustrated. Price, $1.75. Publishers: C. V. Mosby Company, 801 Metropolitan Building., St. Louis, 1918.

CLINICAL MEDICINE FOR NURSES. By PAUL H. RINGER, A.B., M.D., member of staff of the Asheville Mission Hospital, Asheville, N.C. 286 pages, illustrated. Price, $2.00. Publishers: F. A. Davis Company, Philadelphia, 1918.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.B., professor of physiology in the University of Toronto, Ontario, Canada; formerly professor of physiology in the Western Reserve University, Cleveland, Ohio. Assisted by ROY G. PEARCE, B.A., M.D., director of the Cardiorespiratory Laboratory of Lakeside Hospital, Cleveland, Ohio. 233 illustrations, including 11 plates in colours, 903 pages. Price, $7.50. C. V. Mosby Co., St. Louis; McAinsh & Co., Limited, Toronto, 1918.

MENTAL DISEASES, A Handbook Dealing with Diagnosis and Classification. By WALTER VOSE GULICK, M.D., assistant superintendent Western State Hospital, Fort Steilacoom, Washington. Illustrated, 142 pages. Price, $2.00. C. V. Mosby Co., St. Louis; McAinsh & Co., Limited, Toronto, 1918.

THE DISEASES OF INFANCY AND CHILDHOOD. Designed for the Use of Students and Practitioners of Medicine. By HENRY KOPLIK, M.D., attending pediatrist to the Mount Sinai Hospital. Fourth edition, revised and enlarged. 928 pages with 239 engravings. Price, $6.00. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1918.

EQUILIBRIUM AND VERTICO. By ISAAC H. JONES, M.A., M.D., laryngologist, Philadelphia General Hospital, with an analysis of pathologic cases. By LEWIS FISHER, M.D., laryngologist and otologist, Mount Sinai Hospital, Philadelphia. 444 pages with 130 illustrations. Price, $5.00. Publishers: J. B. Lippincott Company, Philadelphia, London, and Montreal, 1918.

UNITED STATES ARMY *X*-RAY MANUAL. Authorized by the Surgeon-General of the Army. Prepared under the direction of the Division of Rœntgenology. 506 pages with 219 illustrations. Price, $4.00. Publishers: Paul B. Hoeber, 67 East 59th Street, New York, 1918.

Medical Societies

CANADIAN PUBLIC HEALTH ASSOCIATION

THE eighth annual congress of the Canadian Public Health Association will be held in Toronto, on May 26th, 27th, and 28th, and will be a joint congress with the Ontario Health Officers' Association. Section meetings will be held in Child Welfare, Social Hygiene, Mental Hygiene, and Laboratory Work. It is planned to make this congress the largest public health convention, so far, held in Canada.

KINGSTON AND FRONTENAC MEDICAL AND SURGICAL SOCIETY

The regular monthly meeting of the Society was held at the Frontenac Club, February 10th, the president, Dr. Boyce, in the chair.

The Society has revived its pre-war custom of holding a banquet every other month before the reading of the paper. There were forty-one in attendance including several representatives from neighbouring towns.

The speaker of the evening, Dr. Bray of Ray Brook Sanatorium, N.Y., gave a most interesting paper or, rather a clinic on "The early diagnosis of pulmonary tuberculosis"—an old subject, but ever new in the hands of an expert. Dr. Bray emphasized the importance of a good history. No history is complete that does not include a history of the environment of the patient during early childhood. All too frequently it will be found that as a child the patient was in frequent or prolonged contact with an open case of tuberculosis. In only about 35 per cent. of the cases at Ray Brook is the family history negative. In discussing the symptoms, the speaker pointed out that instability of the nervous system and gastric disturbances were often found among the earliest manifestations of the disease, and too frequently not appraised at their full value. A persistent cough, even when the patient appeared to be in perfect health, should be the subject of a careful enquiry. Both cough and expectoration may be absent in the early stages of the disease. He emphasized the diagnostic value of localized moist râles at the points of predilection, and especially if these râles persisted after coughing.

He demonstrated his technique of bringing out these râles on a patient from the Mowat Sanatorium. It consisted of first, a full inspiration, then a full expiration, then a pause and lastly, a cough. If the râles described above were then audible, he would regard the case as one of tuberculosis.

After testing this auscultatory sign in a great number of patients, he had found it trustworthy in 90 per cent.

In discussing the laboratory tests, he advised repeated examination of the concentrated sputum. In 70 per cent. of the

early cases the tubercle bacilli were absent. Regarding the value of the deviation test, opinion was somewhat conflicting. He advised delaying judgement. He emphasized the importance of obtaining good *x*-ray plates in all doubtful cases, and showed a large number of very excellent ones.

Dr. Third in opening the discussion, agreed entirely with the importance of a good history. Next to a good history came a careful inspection. Are there depressions below the clavicles? Is there deficient expansion on one side? Does the chest expand evenly, or does one side lag behind the other? Does the area supplied from the third and fourth cervical segments, the collar and cape area, show atrophy?

A study of the viscero-motor and viscero-sensory reflexes he considered essential. He attached considerable value to the presence of the post-tussive râles. In all cases, however, there should be a careful collection of evidence from every available source, and when all the evidence is in, it should be carefully weighed by a judicial mind. In this way the possibility of error would be reduced to a minimum.

Dr. Sinclair, of Gananoque, said he was somewhat surprised to learn that the reading of *x*-ray plates was such an easy matter. A case that had recently come under his notice had given him an entirely erroneous idea. A surgeon had removed the stomach of a patient suffering from pyloric cancer. Several months later he sent the patient to a radiographer for a plate. The diagnosis came back "cancer of the stomach".

Dr. Hopkins, medical superintendent of the Mowat Sanatorium, who had been associated with Dr. Bray for some time at Ray Brook, added his quota of appreciation.

Dr. Quigley, who had been radiographer to No. 7 General (Queen's) in France and elsewhere for about three years, discussed the value of *x*-ray plates in diagnosis.

Dr. J. C. Connell (Eye, Ear, Nose and Throat) asked if ever tuberculosis was primary in the larynx. He had been led to ask this question from the fact that in a number of cases recently he had found definite lesions in the larynx when the physician referring the case had not been able to find any in the chest. Dr. Bray in replying, said in his opinion tuberculosis of the larynx was always secondary.

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RECENT WORK ON THE CHEMISTRY OF THE BLOOD AND URINE

By William Boyd

Professor of Pathology, University of Manitoba

IT has become a well-worn platitude that just as there are fashions in clothes so there are fashions in medicine. There are the great fashions, extending over a quarter or half a century, and there are the little fashions which last for two or three years. Fortunately much of what is good in the fashions of medicine is extracted and retained, whilst the gross extravagances which accompany and obscure the truth pass away and are remembered no more.

The latter part of the nineteenth century has been the period of the triumph of the morbid anatomist, although latterly the bacteriologist has tended to displace him. The mighty impress which Virchow laid on medical thought has made us demand a pathological lesion—preferably macroscopic, or if that be impossible, microscopic—for every ill that flesh is heir to. It is possible that we may have been carried too far along this line, if for no other reason than that it tends to make us study end-results rather than the beginnings of disease, which is certainly not in the best interests of the patient.

The epoch-making work of James Mackenzie has taught us that, after all, disturbance of function is the important thing, however fascinating and alluring alterations in structure may prove to be. But we are at once confronted by the great difficulty: How are we to recognize and estimate early alteration in function? In the case of the heart it is comparatively easy, for the symptoms

A paper read before the Winnipeg Medical Society, March 21st, 1919.

are such as to impress themselves upon the patient, and with a gland such as the thyroid the difficulties are not insuperable, but what are we to say in the case of such great and all-important glands as the liver, the pancreas, the kidneys, or the adrenals? The correct functioning of these and other glands is essential for the well-being of that wonderfully complex machine, the human body, but in the past our methods of investigation have surely been both crude and clumsy. We have confined ourselves largely to determining the waste products of the machine, often with no reference to the fuel which was being supplied at the same time. Such methods applied to the study of any delicate mechanism would be doomed to failure. It should be our aim to gain some idea of the morbid processes which are actually going on before any alteration in the nature of the waste products has had time to make its appearance.

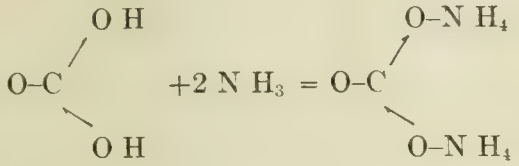
This is the aim of the investigations into the chemistry of the blood which are beginning to assume such an important place in modern medicine. Many of these investigations are laborious and time-consuming, and may not appear at present to lead us to any very definite goal, but for all that, the new weapon placed in our hand is capable of winning great triumphs, and it is possible that these triumphs may in the course of a few years become as remarkable, as epoch-making, as those which followed the early investigations into the character and functions of bacteria.

Most of the recent work has been done on nitrogen metabolism, but before entering into the special methods of investigation it may be well to recall to our minds some facts regarding the manner in which nitrogen is absorbed and disposed of by the body.

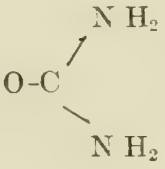
The nitrogen of the food is contained in the protein molecule. The albumens and globulins of food protein are disintegrated by the digestive juices of the stomach and pancreas into proteoses and peptones, and ultimately into amino-acids, of which there is a very large number, but all of which are distinguished by the possession of the group NH_2. The original protein molecule is a huge complex affair, occurring in the colloid state, and with a molecular weight of, in some cases, over 15,000. The amino-acids, called by Emil Fisher the building-stones of the protein molecule, are, on the other hand, crystalloid bodies of relatively simple constitution, easily soluble and readily absorbed. They have lost all protein characters.

What, then, happens to the amino-acids when they pass through the intestinal mucosa into the portal circulation? Some

are carried through the liver and are distributed to the body generally, where they combine with the tissues and are utilized partly for body building, partly for the production of energy. Others, however, are decomposed by hydrolysis and undergo the process of deaminization, in which the N H_2 group is split off and converted into ammonia. This combines with the carbonic acid of the blood, with a resulting formation of ammonium carbonate, according to the equation.



This is converted by the liver into urea.



Some of the N H_3, however, escapes this fate and is used for neutralizing the acid bodies in the blood, in combination with which it is excreted in the urine. If these acid bodies become increased in amount, less of the N H_3 is available for conversion into urea and more is excreted in the urine (combined). It is thus evident that in the clinical condition of acidosis an increase of urinary ammonia will be a sign of great importance, which may make its appearance before the acetone bodies can yet be detected in the urine.

All of the urea, however, is not derived from the amino-acids of the food. There is in the body a constant disintegration of the tissue proteins, and the resulting amino-acids are carried to the liver, where they are converted into urea.

The nitrogen of the body occurs in two great forms: as protein nitrogen in albumen and globulin, with which we are not specially concerned, and as non-protein nitrogen, the latter representing the simple disintegration products or metabolites of the former. The nitrogen partition, a term often used in the modern literature on the subject, indicates the manner in which nitrogen is distributed amongst the various non-protein nitrogenous bodies. Of these the most important are urea, ammonia, uric acid, creatin and creatinine. The last three are the more important of the purin

bodies, which are derived from the decomposition of the nucleoproteins contained in the nuclei of the cells.

Uric acid has a double origin, partly exogenous, from the nucleins in the foodstuffs, and therefore becoming especially abundant after a meal of such foods as liver and pancreas which are rich in nucleins, partly endogenous from decomposition of the nucleins in the body tissues. Creatinine, derived from creatin in the tissues, is entirely endogenous in origin, being independent of food ingested, and thus affords an accurate and important index of the state of nitrogen metabolism in the tissues themselves.

Table Illustrating the Behaviour of Some Constituents of the Blood in Uræmia and Diabetes

Condition	Total N. P. N.	Urea N	Creatinine	Sugar
	Mgms. per 100 c.c.			Per cent.
Normal	25–35	12–20	1–2·5	0·08–0·12
Uræmia	80–350	50–300	3–7	.....
Diabetes	.....	.....	.....	0·15–1·30

All of the above non-protein nitrogen substances are excreted in the urine, and their estimation either in toto or individually affords valuable evidence of conditions of disordered nitrogen metabolism. Still more important information is afforded by their estimation in the blood, for, in the language of scripture, it is not that which passeth out in the draught which defileth a man, but that which remaineth in the blood.

Methods of chemical analysis may be applied to the urine or to the blood, in some cases preferably to both. Let us consider first the case of the urine.

The clinical condition in which chemical examination of the urine is most frequently used is, of course, nephritis. In investigating such a case the examinations which afford most information, apart from that for albumen, are those for total nitrogen and for chlorides. These should be coupled with estimations of the specific gravity of two-hourly specimens taken during the day and one of the night urine, together with the use of the phenolsulphonephthalein test for urinary excretion. These tests to be accurate and of real value should be carried out with the patient on a standard diet of known constitution, such as that of Mosenthal, especially with regard to the amount of chlorides ingested. The normal response to such a test meal is 11 gms. NaCl and 11 gms. N. In

parenchymatous or interstitial nephritis there is a marked drop in the chlorides which may amount only to 2 or even 1 gm., and a less marked drop in the total nitrogen, which, however, in advanced cases may reach 5 gms. or less.

In the Mosenthal test for renal function the most valuable information is probably afforded by estimating the variations in the specific gravity during the twenty-four hours. In health this should amount to at least nine points, and one of the earliest pieces of evidence of impairment of function is a fixation of the specific gravity, the variation falling to considerably below nine.

The estimation of the urea in the urine has somewhat fallen into disrepute owing to the inaccuracy of the hypobromite method, but the modern urease method of Marshall has added immensely to the value of the test. An increased excretion of urea occurs in fevers, owing to increased destruction of proteins, and a marked increase is seen during the absorption of an inflammatory exudate, and in the resolution stage of pneumonia. In these latter conditions there is a corresponding increase in the chlorides, for these salts are bound up in large quantities in the pneumonic exudate and in pleural and peritoneal effusions.

The urea is markedly diminished in diseases of the liver, especially in such a condition as acute degeneration. In these cases the ammonia excretion is high, for only a small amount of it is converted by the liver into urea. In nephritis there is a diminution in the urea, but only when the disease has reached a stage when it can be diagnosed by simpler methods. In such cases there is a corresponding increase in the blood urea. Here we have an example of the value of combined blood and urinary tests. A diminished urea output in the urine may be due to diminished urea *excretion* due to renal disease, or to diminished urea *production* due to disturbance of liver function. An examination of the blood urea will at once differentiate between these two conditions and establish the diagnosis.

Reference may be made at this point to Ambard's cœfficient. This expresses the relationship between the concentration of urea in the blood and the amount of urea excreted in a given time, that is, the rate of excretion. In health this cœfficient is very constant, but in renal disease there is a relative increase in the concentration in the blood and a relative decrease in the rate of excretion in the urine.

Next to urea the most important non-protein nitrogen constituent of the urine is ammonia. This, it will be remembered, is

derived from the decomposition or deaminization of the amino-acids, partly of the food, partly of the tissues. The $N H_3$ of the blood serves one extremely important function: It is one of the chief factors in keeping the reaction or hydrogen-ion content of the blood at a constant level. When inorganic acids are ingested in the food, the $N H_3$ in the blood combines with and neutralizes them, more $N H_3$ appears in the urine, and less is converted into blood urea. Exactly the same thing happens when the organic acids in the blood reach a pathological level, owing to the faulty metabolism of fats. In the acidosis of children, in the acidosis following surgical operations, and most of all in the acidosis of diabetes, the $N H_3$ combines with the abnormal acids in an endeavour to preserve the alkalinity of the blood, and is therefore excreted in very large quantities in the urine. The important fact to be noted is that this increase often occurs a considerable time before the appearance of acetone bodies in the urine. In diseases of the liver, particularly in cirrhosis, there is often an increase of ammonia in the urine, owing to interference with the normal conversion of ammonia into urea by that organ.

Let us turn now to the other great method of investigation, the chemical analysis of the blood. It is important to know what products of protein metabolism are being excreted from the body, but it is still more important to know which are being retained in the blood. A study of blood chemistry shows, moreover, how the balance is being maintained between production and excretion, and it is this balance which is the important thing from the point of view of health.

The products of protein metabolism are represented by those substances included under the term non-protein nitrogen which we have already considered, the most important being urea, ammonia, uric acid and creatinine.

Estimations of the total non-protein nitrogen are of considerable value. The normal figure is from 25 to 30 mgms. per 100 c.c. In renal disease this becomes much increased and may rise as high as 350 mgms. per 100 c.c. In chronic passive congestion of the kidney there is no retention, but in advanced nephritis the figure may be very high. Patients with over 100 mgms. usually die in four or five weeks, even though the phthalein excretion may be fairly good. In uræmia the non-protein nitrogen is always very high, but it is interesting to note that in eclampsia the rise is seldom marked. A marked elevation of non-protein nitrogen makes a patient a poor operative risk. Finally it may be remarked that

Tileston and Comfort in a series of one hundred and forty-two cases found a considerable degree of retention in 36 per cent. of all syphilitics examined.

The method for estimating the total non-pretein nitrogen in the blood is somewhat complicated, and data of equal value can be obtained by the much simpler methods of study of blood urea and blood creatinine.

Urea. Until very recently our only clinical method of estimating urea in the urine was the notoriously inaccurate one by means of sodium hypobromite, which, moreover, could not be applied in the case of the blood. In 1912, however, Marshall showed that the soy bean contained an enzyme named urease which had the power of converting urea into ammonium carbonate, and which acted on urea alone. This at once furnished an extremely accurate method of estimating the urea not only in the urine but also in the blood. The ammonia is driven off from the ammonium carbonate, collected by bubbling through acid, and the amount estimated by titration.

Urea constitutes 50 per cent. of the total non-protein nitrogen of the blood, and its estimation often affords information which throws a flood of light upon a case. Suppose, for instance, the urine urea of a patient is found to be very low. This may be due to one of two entirely different causes. It may be owing to inadequate renal excretion, whereby the urea is held back in the blood, being produced in normal amount. In this case the blood urea will be above normal to an extent proportional to the kidney defect. On the other hand, the low urine urea may be due to an insufficient formation of urea owing to some lesion of the liver, such as cirrhosis, carcinoma, acute yellow atrophy, or the lesions of eclampsia. In this case the blood urea will be low, or at any rate not above the normal. This examination of the blood will explain the significance of the abnormal condition of the urine.

Let me briefly describe a case which illustrates these points. A few weeks ago a patient in the Winnipeg General Hospital developed eclampsia. The urine urea was 0·6 per cent. (normal 2 per cent). This might be due to retention of the urea or to defective formation of urea. The ammonia in the urine was 0·28 per cent. or four times the normal. As urea is formed from ammonia, the conversion taking place in the liver, these findings suggested that the liver as well as the kidneys was at fault. That the kidneys were in a perilous state was shown by the presence of a very large amount of albumen and of epithelial casts in the urine.

The blood urea was now estimated and found to be 16 mgms. per 100 c.c., i.e., within normal limits. If the case had been one of pure uræmia the figure would have been over 100. There was, therefore, deficient urea production owing to hepatic disturbance. At the same time there was some degree of retention due to renal disorder, otherwise the blood urea would have been below normal. The most significant fact discovered, however, was that the creatinine in the blood was 8 mgms. per 100 c.c., on which finding a fatal prognosis was given. The patient died within twenty-four hours.

The estimation of blood urea is of great value in urological surgery, not so much in diagnosis as an aid to prognosis, and in estimating the operative risk of a case. In kidney and prostatic cases if the blood urea is much above 100 the patient will most probably die shortly after operation from the development of uræmia. An estimation of the variation in blood urea from week to week will afford valuable indication as to the prognosis in these surgical cases, a falling urea being a hopeful sign, a rising urea a bad one.

Creatinine, although constituting only 2 per cent. of the total non-portein nitrogen of the blood, is nevertheless of great importance in arriving at a correct prognosis. We have seen that urea and uric acid have both an exogenous and an endogenous origin, that is, they are derived partly from the food ingested, partly from the metabolism of the tissues. The creatinine, however, is entirely endogenous in origin, and is thus a most important indication of the state of tissue metabolism. Moreover, of the three substances, urea, uric acid, and creatinine, creatinine is much the most easily excreted. Its retention is thus an indication that a most serious degree of renal inadequacy exists. The normal figures vary from 1 to 2·5 mgms. per 100 c.c. It may be said that a finding of over 5 mgms. indicates a fatal prognosis. The higher the figure the more rapid will be the termination. In uræmia it may be as high as 30 mgms. Further, in some cases of high blood creatinine there may be a fair phthalein excretion. In these cases a bad prognosis must be given. As a rule, however, the two parallel one another fairly closely. Finally, in cases with no phthalein excretion there may still be variations in the creatinine content, on which the prognosis may be based.

In a paper of this length it is not possible to touch on some of the finer points of nitrogen blood chemistry, but the more important aspects have been dealt with.

In the time that remains we may consider a few points in connection with the metabolism of carbohydrates. Glucose, the chief sugar in the foodstuffs, is absorbed into the blood without any of the complex changes which the proteins have to undergo, the starches being converted in the intestine into sugar. Some of this sugar is stored in the liver as glycogen. The remainder is carried to the tissues, where it plays the part of fuel. The concentration in the blood is kept at a remarkably constant level, from 0·08 to 0·12 per cent. If the figure rises above 0.2 per cent. the kidneys are no longer able to hold it back, and it leaks through into the urine. The metabolism of the carbohydrates is dependent on and is regulated by the internal secretions of some of the ductless glands, chief among which is the pancreas. The pituitary, the thyroid, and the adrenals all, however, have an important relation to carbohydrate metabolism.

The amount of sugar which appears in the urine is by no means a certain indication of the condition of a diabetic, although of course a very valuable one. Not until the blood sugar has returned to normal limits can the patient's condition be regarded as satisfactory. Recently I encountered two cases which demonstrated in a striking manner the value of blood sugar determinations.

The first patient was admitted to hospital for an operation for inguinal hernia, but it was discovered that his urine contained a large amount of sugar. This was estimated and proved to be 6 per cent. The question arose: was this patient in a dangerous condition of diabetes? I examined his blood sugar and found that it was only 0·18 per cent. A few days of dieting made the urine sugar-free. Such a patient would, of course, need to be careful, and ought to have his urine tested at intervals, but his condition was certainly not the alarming one indicated by the preliminary examination of the urine. He must have had a very low renal threshold, and the slight excess in the blood all passed through into the urine.

The second case was one of diabetic coma. Here there was only 3 per cent. of sugar in the urine, but the blood sugar had reached the enormous figure of 1·3 per cent. The patient died next day. From the point of view of prognosis the gravest error would have been made by trusting to a urinary examination alone.

Finally, a word may be said regarding muscular dystrophy. The ætiology of this obscure condition has been shrouded in mystery, but evidence is now forthcoming which points to an involvement of one or more of the endocrine glands. Several cases have been

recorded in which the blood sugar is well below the normal, and we have at present an obscure case of dystrophy under observation in which the blood sugar is remarkably low, with a correspondingly high sugar tolerance.

Acidosis. Closely related to disorders of carbohydrate metabolism is the subject of acidosis. In health the fats are burned up in the carbohydrate fire to non-toxic products. This combustion is complete as long as there is at least one molecule of carbohydrate to three of the higher fatty acids. In diabetes this ratio cannot always be maintained, with the result that the fire begins to smoke with acid bodies from the incompletely burned fat. These acid bodies accumulate in the blood, and are neutralized by the bases of the blood, notably ammonia, as well as being taken up by the "buffer" action of such salts as disodium and monosodium-hydrogen-phosphate. The result of all this is to bring about an impoverishment of the bases of the body, and thus an inability on the part of the blood serum to combine with and eliminate the acid CO_2. The clinical result is the appearance of the symptoms we know as acidosis.

Acidosis may be recognized by the appearance in the urine of the acetone bodies: acetone, diacetic acid, and oxybutric acid. Prior to this appearance, however, there is an increase in the combined ammonia of the urine, since the ammonia of the blood neutralizes the acid bodies to the best of its ability, and is excreted in increased amount. The acidosis may also be recognized by means of various tests applied to the blood, of which the most valuable is the determination of the power of the blood serum to combine with and carry CO_2, a power which is invariably diminished in acidosis.

The presence of acetonuria must not, however, be regarded as certain evidence of acidosis, for acetone bodies may appear in the urine without any diminution in the CO_2 carrying power of the blood. Further, there may be a true acidosis without any acetone bodies in the urine, as for instance in the retention of acid phosphates which often occurs in nephritis. When there is great disturbance of liver function, as in delayed chloroform poisoning and in the toxæmias of pregnancy, there may be marked acidosis with large amounts of lactic acid and of ammonia in the urine, but with only a small amount of acetone bodies. Such cases are due to disturbance of nitrogen metabolism, rather than to that of carbohydrates.

The list of clinical conditions in which acidosis may play

a more or less important part is being continually added to. The most important are diabetes, post-anæsthetic conditions, starvation, infantile marasmus, the cyclic vomiting of children, pregnancy, advanced nephritis, various febrile diseases such as pneumonia and cholera, and conditions in which a deficiency in the oxygen-carrying power of the blood leads to asphyxia. It is a curious fact that a sojourn at high altitudes always produces a well-marked acidosis.

The subject of the chemistry of the blood and urine is an enormous one, and I fear that I have treated it in but a cursory manner. I trust, however, that enough has been said to convince you that the possibilities of these methods of investigation are great, and that chemistry has joined bacteriology in offering her services as handmaid to the practicing physician and surgeon.

Ordinary disease germs die very readily, or at least lose their power of producing disease when they are dried. An investigation of the library books of a big city, by the method of tracing the history of books known to have been used by infectious persons and then passed on to others, revealed the fact that during the several years covered by the investigation no case of disease was traced at any time to such books. While it is theoretically possible for books to carry certain infections it is very rare. The reason why it is rare, depends upon the fact, that such infection to produce disease must be placed in the book in the form of discharges from the nose, mouth, bladder or bowel of the patient, and must then be removed, usually by the hands, to the mouth of some other person almost immediately, whilst still fresh, and possibly even moist. It will readily be seen that these conditions seldom occurr. The old idea that the germs of disease are very resistant and could remain dry for a long time, while yet retaining their ability to reproduce the disease is based upon a fallacy which has been exploded. It is true that the first disease germ discovered (anthrax) is very resistant and may remain dry for twenty years, or even more, and yet be capable of producing disease at the end of that time if it should reach the body of a man or an animal. By analogy it was supposed that the same thing would be true of other disease germs such as those of tuberculosis, scarlet fever, etc. Later investigations, however, showed that anthrax was a striking exception rather than an example of the rule.

THE INFLUENCE OF THE WAR ON SURGERY, CIVIL AND MILITARY

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THE art and science of war surgery is the art and science of civil surgery. This has been true through the ages. During each period of the world's history our profession has given of its best to the Army and Navy in time of war.

It has been said that war surgery is something different from civil surgery: that war surgery has been of a rough and ready kind. Speaking from my experience in the present war, this view is erroneous, and can only be held by those not fortunate enough to have seen any service overseas.

The instruments of warfare are the end results of the pre-war educational, moral, social, intellectual and scientific attainments of the nations engaged. War reveals to the world the fundamental character of the people developed during peace. It is the clearing house that appraises without favour the quality of the political, religious, and educational organizations that have made the people of the nation what they are. It brings out and demands the best of each one. The perfection of the present organization is seen in the supply, transportation and direction of millions of men moved and controlled by one master mind.

The principles of war surgery are those developed, taught and practiced by the masters during peace. They are the same in Flanders Fields as in the Dutch, Swiss or American civil hospital. One might say that during war the work assumed more the character of acute surgery, and yet at the base there is, sad to say, gradually accumulating a mass of chronic surgery that will call forth all our energy and all our resources.

There is a difference, however, between civil and military surgery. In the latter, probably less variety, but certainly a very great preponderance of emergency conditions, of wounds, of muti-

lations, of multiple and complicated injuries; associated injuries of soft tissues, of hard tissues, of nerves, together with penetrating wounds of the abdomen, chest, and head. We have more frequently to deal with hæmorrhage, shock, and virulent infections.

There is another difference about which very little is said. War surgery at the front is often carried on under distracting and terrorizing conditions, sometimes associated with personal danger to the surgeon as shown by the casualty lists. All this is in striking contrast to the quiet of a civil operating room with walls decorated by requests for silence, sometimes printed in several languages.

During war a large experience is gained in a short time, limitations are quickly reached and defects ruthlessly uncovered.

The combatant army is always demanding more and greater perfection and the Army Medical Services are constantly called upon for greater and still greater efficiency in conserving the man power of the combatant forces.

The present war has eliminated many false ideas, improved and perfected sound principles and methods, and developed to a surprising degree certain fields of surgical activity, that were only imperfectly appreciated before.

The number and varieties of wounds have been so large that opportunity greater than ever before has been afforded for a complete study of their pathology and methods of repair.

Our pre-war ideas of the treatment of wounds of the soft and hard tissues have been modified. Changes that are indeed radical have occurred in our estimate of the value of antiseptics and drainage. Occasion has been offered to acquire in a week a wider experience and a greater knowledge than could have been gained in a lifetime in civil surgery.

The relative value of mechanical and drug cleansing of wounds was quickly determined and led to the adoption of ways and means better than we had before. The primary suture and the delayed suture, developed at our clearing stations, have saved many a poor fellow weeks and months of suffering and painful dressings, as well as thousands of lives.

A conspicuous advance has been made during the war in treatment of nerve wounds. The few cases observed before the war broke out had not enabled a complete study to be made. We were surprised at the number of cases of peripheral nerve injury. We were suddenly confronted with so many facts unlike one another that there was great confusion in classifying and interpreting,

and above all in pronouncing them amenable or not to surgical intervention.

To quote Dejerine, "we had first to establish the exact signification of the variable and differently associated symptoms met with in all the cases, to specify the diagnostic value of partial or total paralysis, of muscular hypotonia and electrical disturbances; of anæsthesia, of paræsthesia, or pains in their various modalities; to throw light upon the problem of vasomotor, secretory, or trophic disturbances, at times so intense, or at other times scarcely perceptible, and above all to connect each of these symptoms with the determining lesion."

Histological study, experimental investigations and the large clinical experience gained during the war have solved many of these problems. The peculiar characters of neuromata and pseudoneuromata are in great part determined. We have learned when to advise surgical intervention.

These histological and experimental discoveries have demonstrated the illogical nature and uselessness of certain interventions and the utility and rationale of others; they have not only encouraged the practice of simple liberations and of nerve sutures, but they have also thrown light on many aspects of surgical technique.

The knowledge thus attained is being diffused through all branches of the medical services of the Allies, and will reach all those interested in medicine through the usual channels, the universities and medical literature.

One might enumerate many other diseases and injuries, the pathology, diagnosis and therapy of which have been similarly advanced during the war; such as penetrating wounds of joints, compound or open fractures of the femur, intrathoracic and pulmonary lesions, injuries to the head and central nervous system, injuries to the blood vessels, mutilating wounds of the face, and intraperitoneal wounds.

Many factors have contributed to the material progress made in so many directions. Of course, one must place first opportunity, as offered by the large number of cases of similar injury. Next I would put the association of surgeons of different nationalities, and speaking different languages, in a united effort, or in other words, concentration of energy. Next in importance I would place the opportunity afforded to surgeons to visit each others clinic or hospital centre, and the education and stimulation

to greater effort that must necessarily follow, the exchange of ideas and inspection of methods and results obtained.

The incentive to work, to devise better ways, to discover more potent methods is the greatest possible. The burning desire to do one's best for those wounded on the field of battle comes to one and all with an intensity never before experienced. Men not previously noted for their energy nor for any very extraordinary ability, have developed into something approaching genius in some special line of work. Several such might be mentioned. I may add that others, who in pre-war days had achieved notable success by other than scientific attainments, have been quickly appraised and have fallen by the wayside.

No conditions or surroundings have come under my notice that have more quickly and correctly established a man's value as a surgeon, than the work of the casualty clearing station. In these stations he is not working alone but side by side with his peers. The consultant of the district has him under his eye. He must deliver the goods or stand by. The character of the work is estimated by three standards: Mortality, military usefulness, and post bellum national value as a citizen.

There are a great many who can speak more authoritatively on the medical and surgical work near the firing line than I can, but from what I have seen and read and heard, I am convinced that the organization there is most efficient, and that all that medical science has to give, together with a loving devotion to duty of the personnel of the different Army Medical Corps, regardless of fatigue, distress or danger, is given freely to the sick and wounded officers and men of the armies of the allies. The numbers are so large that the value of any suggested therapeutic measure is very quickly and withal very accurately determined. This being done, the knowledge is quickly passed along to the different Army Corps for adoption.

The work done at the casualty clearing stations is most important. Early in the war it was learned that the surgical work here demanded the time and energy of the most sane and judicial minds, and young men who could stand up for many hours under great physical and mental strain. It is no small thing to be able to say, that members of our profession have stuck to their job twenty-four, thirty-six, forty-eight hours, and even for longer periods, ministering to the needs of the sick and wounded.

Your criticism of this expenditure of energy is obvious and has been met. Team-work—teams coming on in relays have

taken the place of individual effort to the great advantage of the patient and the personnel. It is a special work, It demands a special training which is quickly acquired." Men at the casualty clearing station soon learn in what cases to give salines, blood transfusions, and the usefulness of drugs. They acquire a perfection of detail in the treatment of wounds of soft tissues, of nerves, of hard tissues, of the central nervous system and of the viscera, that cannot be obtained in any other way, and they seem to acquire a sense of smell for shrapnel.

The next sphere of greatest responsibility is the Base, where some can be made fit again for service but where the problem arises of restoring men of no further military value to civil life in as good a state as possible.

The place for the ablest and most experienced young men is the casualty clearing station. The place for the ablest and most experienced older men is the Base, where reconstruction may be carried out more leisurely.

A feature of the work of the Army Medical Corps during the present war is the gradual appreciation of the advantages of specialization in medical and surgical work. Indeed I may make it stronger and say that the war has demonstrated the necessity of specialization in war medicine and surgery. Perhaps I can make my meaning clearer by reference to one or two specific conditions: The treatment of fractures of the femur is an example of the improvement in and results obtained by specialization. Until General Sir Robert Jones was called on to bring order out of chaos the results from these fractures were lamentable.

This master mind was given charge of all fractured femurs. He installed his method in different centres. The femur cases were detained in France until they could be transported without injury. One of our Canadian hospitals had three hundred femur beds, and in one district I saw over a thousand. The system is now installed in England. Selected medical men were trained in the details of the methods and devoted their whole time to the work. The situation was changed. The end results were immediately improved. The period of disability was shortened and the mortality lowered. They recovered with full or nearly full length, with good alignment, functionating joints and a healthy musculature. Many other examples might be mentioned in surgery, and, as many in medicine. In one hospital in England are assembled all the face cases; mutilations and destructive injuries of the face, including

the mouth, nose, eyes, and ears. Imperials, Canadians, Australians, New Zealanders and Americans are here closely associated in one hospital to do special work in reconstruction.

The united effort of these men is very satisfactory. They are doing a work that can be fully appreciated only by those fortunate enough to see the cases from the beginning to the end—or better still from the front line to the finished product.

This work will be handed back to the civil profession illustrated by photographs, plaster casts and wax models made by artists. I am happy to be able to say that Sir Robert Borden has taken a practical interest in this educational side of the matter, and that our Canadian Government has given the C.A.M.C. a sum of money to provide for our War Museum a very creditable illustration of the work by these artists.

There is another subject about which I would like to say a few words. It does not illustrate the influence of war surgery on civil surgery, but rather the reverse. It shows the application of the practice of civil surgeons to the different and more difficult conditions that obtain near the front during war.

It has doubtless been the general opinion of surgeons that intra-abdominal wounds occurring during the fight were best treated by the expectant plan. Certainly up to the time of the South African war it was believed by many that the operative treative of abdominal wounds was not indicated under war conditions.

The reasons given were that to be successful the operative treatment must be instituted early; that favourable conditions that would insure success did not exist at the front; and that experience taught that a larger percentage recovered under expectant than after active operative treatment. The expectant treatment was the orthodox one when the South African war broke out. There were surgeons who were inclined to challenge this opinion, and notably Surgeon-General W. F. Stevenson, but the attempt to obtain better results by operation was rather a failure.

The conditions in South Africa were particularly difficult. It was, on the one hand a new, unsettled country of great distances with a bad water supply, and on the other hand a dry climate and a virgin soil. Wounds often healed kindly under a first dressing and scabbing. Conditions during the present war have been in many respects quite the reverse. The fighting took place in an old settled country, with a damp climate and a soil fertilized for centuries and full of pathogenic organisms. Above all, the fighting

line was for long periods of time almost fixed, It is probable that some penetrating wounds of the abdomen recovered in the South African war. Recovery would be more likely after clean bullet wounds. Time is an important element; operative treatment must be instituted early to be successful.

In the early part of the war the usual routine treatment was rest, the Fowler position, no food, or water for three days, and the administration of morphia. The distressing thirst was only partially relieved by mouth washes and rectal salines.

To obtain anything approaching an accurate estimate of the success of any method of treatment the cases must be followed after they leave the casualty clearing stations.

Wounds of the small intestines are often closed for a time by eversion of the mucous membrane, contraction of the circular muscle near the wound, and adhesions of omentum, and neighbouring coils of intestine. It thus comes to pass that a patient with penetrating wounds of the intestine may be evacuated from the casualty clearing station in apparently good condition after as long a period as two, three, or even four days, and yet arrive at the Base almost or quite moribund. Only by following the after history of these cases can the surgeon at the casualty clearing station learn the end results. Surgeons have been deceived as to the value of their methods by the good condition that obtained when the patients were evacuated.

Another reason for employing operative methods in abdominal wounds is the frequency of hæmorrhage. Autopsies have impressed this fact upon us.

Souttar with the Belgian Army, and Owen Richards with the British Army, were among the first to adopt operative methods. Since the early part of 1915 the operative treatment has been carried out as a routine whenever thought advisable, and as early as possible, that infection and hæmorrhage might be anticipated and controlled, and this work has been done as near the front as practicable. The mortality has unquestionably been lowered. It is still high, probably not much below 50 per cent., but even that means many lives saved.

The war has brought into closer daily association the surgeon and the scientific workers in the scientific departments closely allied with practical medicine and surgery. Chemists, physiologists, bacteriologists, biologists, and pathologists have been brought into intimate association with the problems of the bedside. Many have for a long time felt that in our medical schools and hospitals

there has been too great a dissociation between the primaries and finals, between the workers and teachers in the scientific and practical subjects.

The war has uncovered this weakness. The necessities of war work have brought together in united effort all those engaged in any of the problems of disease and injury and their treatment. A community of interest has been established comparable to the organization found necessary among the combatants. It is in line with the close association of many departments under one management that has been evolved in the great financial, industrial, and transportation corporations. Each unit or department is suggestive, corrective, and stimulating to the other. Incomparably better results are obtained by the correlation of workers than is possible by dissociated effort.

I am of the opinion that the present war will mark epochs in our knowledge of the pathogenesis, pathology, signs, and treatment of many conditions including the two or three mentioned as illustration.

It must always be remembered that the medical work of the war has been performed by the civilian profession, and after the war they will doff their military dress and resume civilian practice enriched by their varied experiences. The lessons learned during the war will be applied after the war. Medicine has advanced—but at what a cost.

The closer working alliance established between the scientific and the practical workers, has proved so valuable and helpful, that one might venture the prophesy that after the war our physiologists, biologists, pathologists, and chemists will be invited to co-operate more actively than hitherto in our hospital work. That there are advantages to be gained by a closer affinity is established. It is quite possible, even probable, that one result will be a redistribution of the medical student's time. There are signs that our present system of medical education is not considered altogether satisfactory in some of its details.

Several very suggestive articles on this subject, have already appeared, and more are likely to follow. There are indications that the present medical curriculum may be modified in the comparatively near future. It is admitted that no mind (save that of the recent graduate) can, in a life time, master medicine in all its branches.

Our present system of education brings to our universities young men with an inferior mental equipment, that is a handicap

all through their college course. It should be possible for the embryo medical student to obtain in the later years of school life, adequate instruction in the preliminary scientific subjects. He would then come up to the universities with a better mind. He would be able to make more intelligent and profitable use of his time during the early years of his medical training. Then again, if I read the signs of the times correctly, graduate teaching will come to occupy a larger place in the education of a medical man, whether he is preparing for practical or scientific work.

Among the questions suggested by the experiences gained by our profession during the war, I believe one of the most important and far reaching will be the subject of medical education. What the more immediate changes may be is difficult to predict but that both undergraduate and graduate studies will be differentiated more in the future than in the past is highly probable. The same factory cannot turn out Ford and Rolls-Royce cars, nor can the same school turn out general practitioners, physiologists, biologists, and chemists with economy of time to all.

The undergraduate teaching best adapted to one intending to devote his life to preventive medicine, is not necessarily the best education for the man preparing for curative medicine.

The superstructure of the organization of war surgery consists of a board, composed of the Imperial consultants together with a representative from the C.A.M.C., one from the Australian A.M.C., and one from the New Zealand A.M.C. This board meets once a month in London. One or two of the British consultants in France came over and attended each meeting. In addition, twice a year a meeting of representatives of each of the medical services of the Allies takes place in France. At the meetings each country contributes its experience regarding the value of different therapeutic measures, that have been submitted to them at the previous meeting for report.

I may mention, as an example, the question as to the value of blood transfusion in war surgery—a subject by the way that has received material advancement from this city.

Great Britain, France, Belgium, Italy, Serbia, Portugal, through their representatives give their evidence regarding its value in specified conditions, methods of administration, etc. Such an opportunity bringing together a large amount of evidence on one subject in a short time, and of spreading the information over a wide area, only obtains during a great world war in which many nations are concerned.

War surgery, in its organization and in its practical application, may be far from perfect. I hope that it will be subjected to an intelligent and virile constructive criticism. This much I can say, and I am sure your President will concur, and that is, that so far as our observation goes every man in the Army Medical Services is trying to do his bit in a conscientious and self-sacrificing spirit. The Army Medical Services have probably had a freer hand in this war than in any previous army organization, and I think they are proving themselves worthy of the trust.

There is another question arising out of a study of the work by the Army Medical Services, and that is its influence on the personnel. Specialization has been a blessing to the soldier; it has narrowed the vision and perspective of the surgeon. After the war these men cannot occupy their whole time working in such a restricted field. Even in the greatest surgical centres there will not be a sufficient number of broken femurs—or nerve wounds, or mutilations of the face to absorb all the time and energy of a surgeon.

Re-education will be needed. Many men have worked in hospital wards doing routine dressings, some have been engaged as combatants, others in administrative work; very few have seen much of both medicine and surgery.

Before they return to their homes and resume practice, they should be afforded an opportunity of brushing up. The better class of men will seek such opportunities, others should be encouraged to find and embrace them.

EXOPHTHALMIC GOITRE

By J. K. McGregor, M.B.

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OUR present conception of hyperthyroidism is based on what is known of the physiology of the thyroid gland and its changes in disease. There are two known products of the glands: Colloid and its hormone, or the alpha iodin compound of Kendall. The gland's function is the determination of the amount of energy any cell in the body can produce upon stimulation either from within or without. An increase in the hermone will produce increased activity of the gland; increased energy of all cells and therefore increased metabolism.

A patient with hyperthyroidism is like a body on fire. Combustion is excessive. Clinically the patient has a good appetite, eats well, but loses in weight. The fire rises and falls as the hormone in the gland is released or withdrawn.

This leads to the work of Plummer along this line and because of its bearing on the differential diagnosis and its usefulness as an index of the patient's recovery it might be well to give a short description of the technic used.

A patient to be examined for metabolism is put at rest for fifteen minutes. A mask is tightly fitted over the face through which is inhaled outside air and from which leads a tube carrying the exhaled air to a gasometer. The percentage of oxygen in the air is a known quantity, 21 per cent. The volume of air exhaled in a given time, and the percentage of CO_2 therein is estimated. The amount of CO_2, when compared to the oxygen taken into the lungs, will give the amount consumed within the body, or, in other words, the amount of fuel consumed in the production. This, when figured with the square body surface (after Dubois table) is expressed in percentage of metabolism. The normal being zero, with an element of error of 5 per cent. either way, hyperthyroid cases usually run an average of plus 50 per cent. and may run

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as high as plus 140 per cent. The practical side of this test, insofar as it has gone, is, that the group of cases showing symptoms of tachycardia from psychic or other causes will not show an increase in metabolism. Adenomas of the thyroid which may have given toxic symptoms show a rapid return to normal metabolism when removed. This return to normal at an early date marks the difference between the thyrotoxic and the exophthalmic goitre. Ligated exophthalmic cases will gain twenty-five to thirty pounds in a few weeks, but the metabolism will not decrease with the gain in weight and the general improvement in the patient's condition. As an index of whether enough gland has been removed at the operation the test offers something tangible, whereas previous to this it has been pretty much a matter of conjecture.

The symptoms of exophthalmic goitre given in the order in which they usually make their appearance[1], are: Cerebral stimulation; vaso motor disturbances of the skin; tremor; mental irritability; tachycardia; loss of strength; cardiac insufficiency; exophthalmos; diarrhœa; vomiting; mental depression; jaundice.

The course of the disease may be represented by a curve. The curve rises gradually to its greatest height during the first year, and then gradually falls with intermittent exacerbations during the next three or four years. Some cases run an acute course, resulting in death in a few months. The gland itself may be but little enlarged, may be hard, nodular or soft and pulsating. Balfour points out that the throbbing of the superior thyroids is characteristic of the disease. The sex proportion is about three females to one male, and the disease is most common in the second, third, and fourth decade.

Confusion in diagnosis is probable with the thyrotoxic or non-hyperplastic type. This disease gives a history of the appearanee of an enlargement of the thyroid at the age of twenty. No symptoms have arisen until the age of thirty-six, when cardio vascular degeneration, the result of the toxic condition, begins to make its appearance. These cases in the advanced stage give the highest operative mortality, running as high as 5 per cent. in expert hands. They offer no results from preliminary ligations. In the differentiation between exophthalmic goitre and tachycardia due to other causes, where possible, the metabolism test will be used. This should be of great use to military boards examining returned or discharged soldiers, as I believe this class of case has given rise to much uncertainty as to its classification.

The selection of time for surgical interference is of the utmost

importance. During the first year of the disease it is very doubtful whether anything but rest and medical treatment should be advised. It is equally true that early operation, before damage has been done to the heart and other organs, will give a lower mortality and a higher percentage of permanent cures than if the operation is undertaken late in the disease. The mental state of the patient is by far the best index of the safety of surgical procedure. When the patient is on the down curve is the time to select for one of the preliminary steps.

Ligation of one or both thyroids has done more than anything else to reduce the mortality in this disease. To this I think should be added Porter's injection of boiling water. Both on account of the marked improvement following either of these plans, and because an estimation of what the patient can stand, is thereby obtained, the removal of the gland should never be attempted as a primary surgical procedure. Porter's treatment is simple and may if necessary be done in the office. No anæsthetic is required. All that is necessary is a large metal syringe and a heavy pair of *x*-ray gloves. The gland is pushed up from behind by an assistant and the boiling water injected into one or both lobes, the quantity depending upon the size of the gland and whether a ligation is combined with the injection or not. Care should be exercised not to infiltrate the tissue outside the gland. Care should also be taken that the syringe is firmly fastened to its needle, thereby avoiding the chance of a disagreeable burn, which has happened to many operators, by the sudden separation at the junction of the needle and syringe. My personal experience, which has been eighteen cases in the last two years, without a mortality, either with the injection or in the subsequent removal of the gland, has led me to advocate this method as equally beneficial to ligation, and in my mind of less shock to the patient, thereby being appropriate to the more desperate cases.

The removal of the gland may be undertaken from ten days to several months after the preliminary treatment, depending on the reaction.

The operation itself should be done under a general anæsthetic with a preliminary dose of morphia. Judd[2] says that there is no contraindication for the use of ether anæsthesia, even in the desperate cases. Crile's method of preparation or "stealing" the gland, is of use in selected cases. It is important that all nervous patients, and those who have a badly damaged heart, should be generally etherized. In the experience of the Mayos' the opera-

tion carries less danger than when it is attempted under a local anæsthetic. Control of bleeding in the operation is one of the most essential points. Special attention should be paid to superficial vessels. If a part of the posterior capsule with a small amount of gland substance is left, irritation to the larynx is less and the convalescence is easier. The leaving of the lower lobes, by cutting directly through them with the scissors, avoids the danger of injury to the recurrent laryngeal nerve. It is advised that all cases should have the vocal cords examined previous to an operation, for, as has been pointed out, there may be already an injury to the nerve on one side. The amount of the gland removed should not be more than five-sixths of the total. This, however, can only be gauged by experiences.

We have used, before closing, Harrington's solution on a swab over all cut tissues. The operation is completed with a stab drain introduced below the incision, this being removed on the second day.

Post operative treatment consists of morphia administered liberally, ice pack to the præcordial region, and continuous saline per rectum. Absolute quietness should be insisted upon, and upon leaving the hospital the patient should lead a careful life for several months, free from influences which may call upon any reserve energy.

An increase in weight is noted at once with a gradual disappearance of other symptoms, exophthalmos being the last to remain.

Injury to the vocal cords has been a very frequent complication with us, but in every case a readjustment with recovery has taken place.

As to the results of surgical treatment of exophthalmic goitre, Balfour[3] says that the patients' verdict should be taken, although actually no cure is made unless all the symptoms have entirely disappeared. If this is accepted 75 per cent. of cases will be cured or able to carry on their ordinary life duties; 20 per cent. will be improved, and 5 per cent. will show very little, if any, change.

My mortality has been one death in fifty-three cases that have come to operation. In this case no preliminary operation was done.

Any success we may have had in handling this disease, I believe is due, not so much to the operation as to the fact that cases coming to us have only been accepted on the understanding that they must put themselves absolutely under our care for the

next six months and that they will accept any line of treatment mapped out for them during that time.

In conclusion, I would say that if the confidence of the patient has been gained, and the surgeon shows both patience and good judgment in selecting the time of operation, the operative mortality should not be any higher for the average surgeon than it is in those clinics where the operation is a daily occurrence.

References:

1. Plummer.
2. Judd.
3. Balfour—"Collected Papers," Mayo Clinic, 1915.

War has resulted in a serious depletion of our supply of radium. As a result of the reckless use of this material there is little available for surgery, which is generally acknowledged as the field in which radium can render the greatest service. Mesothorium, an element similar to radium, has been called into use. Unlike radium, which is the product of ores, mesothorium is extracted from a kind of sand. It is extremely like radium in character and effect. It differs mainly in its life. Radium reaches its full power in thirty days and in two thousand years that power would diminish only one half. Mesothorium, on the other hand, takes a year to gain its full strength, at which time it is as powerful as radium, but in five and one-half years its strength is almost gone. As the life of the average luminous watch is less than five and one-half years, mesothorium is a satisfactory substitute for radium for this purpose. The radium on a dial would really last for nearly two thousand years. It would not be recognizable, however, after a few years, as the zinc sulphid which is mixed with the radium to enable it to give forth its light, would gradually disappear. The radium desposits on worn out watches and instruments could be used again if a sufficient number of articles could be collected to warrant the expense of separating them.

ACTINOMYCOTIC INFECTION—WITH CASE REPORTS

By A. I. McCalla, M.B.

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THE whole subject of actinomycotic infections is shrouded in darkness and uncertainty. Recently, James Horner Wright of Boston has done extensive work on this subject, but his findings do not agree with the work of other writers in all particulars. In fact, there are differences of opinion on almost every point with the exception of the pathology of the disease.

I shall take up the subject under the usual heads:

1. Definition. 2. Historical. 3. Ætiology. 4. Pathology, general and specific. 5. Symptomatology. 6. Prognosis. 7. Treatment.

1. *Actinomycosis* may be defined as a subacute or chronic, local or generalized infection brought about by a specific microorganism, the actinomyces bovis, and resulting in necrosis and suppuration with the production of much granulation and connective tissue.

2. *Historical.* The organism was first seen by Von Laugenbeck in 1845. It was later found by Ballingar in the ox. The botanist, Harz, gave it the name actinomyces or "ray fungus". In 1878, Israel reported cases in human beings, and gave cultural characteristics. Since 1880, much work has been done, particularly by James Horner Wright of Boston. His work has done much to clear up the preexisting confusion, but his findings are not accepted in all quarters.

3. *Ætiology.* The causative agent is the actinomyces bovis. Wright claims that the actinomyces bovis is a separate and distinct group, and should not be confused with the leptothrix, claudothrix, or nocardia; which he claims are entirely different, having widely varying cultural characteristics, a different habitat, and producing in the animal organisms, a characteristic type of disease. Foulerton, on the other hand, claims that all organisms

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belonging to the higher bacteria should be placed in a single genus-Streptothrix, Class Hypomycetes and states that streptothrix and actinomyces are synonymous terms. Most authorities, however, place the actinomyces in a distinct group, between the bacteria on the one hand, and the moulds and hypomycetes on the other. Two distinct types are described by early writers. Bostrom, in 1890, described an organism which grew best ærobically, on ordinary culture media, and at room temperature. He noted its frequent occurrence on fragments of grain and on grass; and this led to the finding of similar threadlike, branching organisms scattered widely in the outer world. These do not lead, on introduction into the animal body, to true actinomycosis, and should not be regarded as the ætiological factor in that disease. Wolf and Israel, in 1891, described an organism isolated from human cases. It grew best in the absence of oxygen, and on special media, and not at all at room temperature. Injection of this organism into animals produced tumours in the peritoneal cavity, histologically resembling true actinomycosis, and from which the micro-organism could be isolated. Most subsequent writers agree with the findings of Wolf and Israel, and claim this as the true actinomyces bovis, and the only organism that should be so described. In the pus from lesions caused by actinomyces bovis, the organism exists in the form of small whitish and yellowish granules, measuring up to one or two millimetres. These are the so-called sulphur granules. These granules are composed of a net-work of branching filaments, arranged in a radial manner. Often, about the terminal filaments, are found hyaline, clublike bodies, formed by the terminal filaments becoming surrounded by a sheath of hyaline material. These clubs have been regarded by various writers as (1) Organs of fructification; (2) Degeneration products; and (3) As a protective device, allowing the actinomyces to live under conditions that otherwise would prove fatal.

The clubs are not produced with any degree of constancy. Mallory claims that they are very rarely found in human cases; and all observers agree that they are much more common in animal lesions than in human forms. In the preparations that I have made I have never been able to find any clubs. In smears from the pus from infected cases stained by Gram's method, the organism appears as long or short branching filaments, having irregular staining areas along their length. At times, they are very short and resemble cocci. They are Gram positive, and the clubs, when present, are Gram negative. It is not necessary to find the clubs to make a diagnosis of actinomycosis.

There has been a great deal of confusion regarding the mode of infection, and the portal of entry of the actinomyces, resulting from the conflicting characters of the two types described by the early writers. The organism described by Bostrom had its habitat largely in the outer world, on grain, grasses, etc., and the infection was thought to gain entrance to the body through these substances. In many cases also there was a history of eating uncooked grain. This idea is erroneous, because actinomyces bovis does, viz.: not have the histological characteristics of this saprophytic group; luxuriant growth at room temperature on all ordinary media, but rather has cultural characteristics suggesting that its habitat is not outside the animal body. It is claimed that the organism probably exists normally in the mouth and alimentary tract, where it is not recognized on account of its morphology being different from that which it assumes in the lesions. It gains entrance through carious teeth, breaks in the mucosa of the mouth caused by foreign bodies, and possibly through preceding acute infection. The fact that some of the cases give a history of an acute onset, a period of quiescence, followed by actinomycotic infection, would lend colour to this view.

The infection is not contagious. It is exceedingly difficult to produce the disease by injecting the infected pus into animals; and on account of its low direct virulence, it would seem that a greatly lowered resistance or a natural susceptibility, or both, must be present. It is said to occur more frequently in men than in women; more often in the cities than in the country, though this is not true of many cases.

4. *Pathology.* The changes produced in the animal organism by the actinomyces bovis are destruction of tissue with suppuration, and the formation of large masses of granulation and connective tissue. In its spread, it does not follow the fibrous and muscular planes of the body: but invades everything in its path; in this way resembling a malignant growth. The amount of connective tissue found is often enormous, and far exceeds the size of the colonies of the micro-organisms. Macallum says that giant cells are not found, nevertheless they are occasionally present

N.B.—It is interesting in this connection to note that the first intimation of the disease in one case, occurring in the appendix, was the finding of giant cells in the mucosa. The appendicectomy was performed during an acute attack, and the giant cells were discovered during a routine examination of the sections.

Healing may occur at one point when the disease is spreading at another. Irregular scar formation results. The disease spreads either by direct extension or by metastasis; through the invasion of the blood-vessels, and the breaking off of masses of the mycelium. Extension by the lymphatics, or involvement of the lymph-glands is said to be exceedingly rare, if indeed, it occurs at all. Secondary infection by the pus-producing cocci is exceedingly common, some authors stating that the actinomyces alone are unable to produce pus. There is often glandular enlargement due to the suppurative processes, but the glands are never involved by the growth of the organism. If, however, the glands should lie in the line of growth if one may use such an expression, they would be involved the same as the other tissues of the body. Given an organism producing the effects described, it is not hard to forecast the changes produced in various parts of the body.

About sixty per cent. of all cases occur in connection with the mouth and pharnyngeal cavities. Infection probably occurs, in most cases, through carious teeth, and the infection may spread by direct extension, to the bones of the jaw or the face. During the spread, the soft parts are involved, and pus cavities are formed, which, breaking on the surfaces produce sinuses. Large amounts of connective tissue are thrown out, and the result is a mass of granulation and connective tissue riddled with pus pockets and sinuses.

The bones of the skull and the brain may be involved. One case of primary actinomycosis of the brain has been described. Extending downward, the sides of the neck are involved in the same sort of processes.

Fifteen per cent. of cases occur in and about the thorax. Abscess and cavity formation are the rule. The disease may spread to the pleura, and an accumulation of fluid be produced in the pleural cavity. The infection may extend through the chest wall, producing sinuses discharging on the surface. The mediastinum and the heart may be involved in the destructive process.

Abdominal actinomycosis produces about twenty per cent. of all cases. The pathology is the same here as elsewhere. Beginning in the mucosa, usually of the cæcum or the appendix, the disease spreads through the wall of the gut involved, advances rapidly through and between the coils of bowel, forming masses of granulation tissue, and later connective tissue. As the condition progresses central necrosis of the masses is produced, resulting in

abscess cavities. Eventually, having worked its way through the belly wall, the abscesses rupture on the surface, forming discharging sinuses and fæcal fistulæ. If the mass is recognized early, and an operation performed, much connective tissue is encountered. If the usual procedure is followed of ordinary drainage, the discharge continues, and a sinuse remains which refuses to close.

If the whole mass has been dissected out, and the wound closed, as sometimes happens in early cases, after a short time, pus forms, the wound reopens, and a chronic discharging sinus develops. Any of the other organs of the abdominal cavity may be involved, and the process is the same in each one. Most cases originate in the gut at some point.

The few remaining cases occur as primary actinomycosis of the skin. It is a very rare disease. Skin is attacked secondarily to involvement of the muscles, bones and deeper structures. The disease in the skin is characterized, here as elsewhere, by the formation of nodular masses in the deeper layers. This extends out to the surface with the discharge of pus containing the micro-organisms. The disease spreads by continuity, sinuses develop, and much connective tissue is thrown out. The condition is progressive, and exceedingly chronic. The lymph glands are not involved.

5. *Symptomatology.* There is no definite symptomatology, but we find symptoms resulting from the tumour formation and the suppuration.

In abdominal cases, often the first thing to call attention to the disease is the presence of a mass. At times, it begins as an acute appendicitis; but we have to remember that probably the acute attack is not caused by the actinomyces, but it simply produces a suitable soil for the subsequent growth of the organism.

About the head the disease may occur as an acute illness, with swelling, pain, and rise of temperature; but more often a mass slowly develops with very little discomfort, except that due to the tumour itself.

In the chest, you have the symptoms of destruction of tissue, with abscess formation. As long as it is confined to the lungs themselves, very few symptoms develop. If a bronchus is opened, you have cough with expectoration in which the organism may be found. When the pleura is involved, pain follows.

As the disease progresses, we have rise of temperature, with loss of weight and weakness, and symptomatology suggesting

tuberculosis; but no tubercle bacilli are found in the sputum. Actinomycosis usually affects the base; tuberculosis, the apex.

The clinical findings of empyema may develop with involvement of the pleura. Puncture is apt to be dry, no pus being found or perhaps in very small quantities, examination of which may reveal the micro-organism.

In cases where multiple metastatic foci of infection have been formed, you have virtually a pyæmia with all the symptoms of that disease.

The tumours growing in the brain, mediastinum, side of the neck, etc., will give rise to symptoms resulting from pressure.

6. *Prognosis.* This depends upon the site and extent of the lesion. In those cases involving the head and neck, probably seventy-five per cent. recover. In the thoracic type, the outlook is exceedingly bad. There are series of cases reported without a recovery. Other writers claim a recovery of one or two in a series, but it is doubtful if these are permanent. Wright states that there are not more than a half-dozen cases of recovery reported in the literature, and that most of these are doubtful.

In the abdominal type, the prognosis is bad; but better than in the thoracic form of the disease. It is better when the retroperitoneal space has not been involved; the disease being confined to the coils of intestine or the anterior abdominal wall.

The ideal situation as regards prognosis in any case, would be a lesion that could be removed fairly completely, surgically, followed by appropriate medical treatment.

Recurrences are not rare, even after apparent cure. Two years should elapse before a cure is said to be effected.

7. *Treatment.* This resolves itself in three forms—surgical, medical, and treatment by radiation.

(1) Surgical. Abscesses should be drained, sinuses curetted and isolated foci removed, where possible, as in the early actinomycosis of the appendix.

(2) Medical. In all cases, whether or not possible to begin with surgical procedure, potassium iodide should be administered in large doses, extending over long periods of time.

(3) Radiation. Combined with the surgical and the medical management, the Roentgen rays and radium are claimed to have influenced a beneficial effect in the limitation and cure of the disease.

Case 1. M. H., boy, aged twelve, child of a farmer, pre-

sented himself on June 18th, 1917, with a swelling on the right side of the face; was suffering no pain. He gave the following history.:

About one year ago, he first noticed a lump on the right side of face. It developed suddenly after a blow, and lasted one week, disappearing at the end of that time without treatment. After a couple of weeks, it reappeared, and has remained since.

About January 1st, 1918, was operated on, and there has been a more or less constant discharge of pus ever since.

Examination showed a hard mass on the right side of the face, apparently involving the lower jaw on that side. It was firmly adherent and was discharging pus. After repeated examinations, extending over some days, the actinomycoses were found in preparation stained by Gram's method. No clubs were found. The patient was put on potassium iodide gr. x. t.i.d. Reported again on January 16th, at which time he was taking grs. xxv. t.i.d. There were no areas of fluctuation, and no discharge of pus. On March 20th, mass was smaller, but a soft spot had appeared on the surface, and looked as if it were about to rupture. Boy has been lost track of since.

Case 2. H. S. P., aged twenty-eight, male, farmer. On August 28th, 1913, he gave the following history:

Three days before, throat became sore; he had difficulty in swallowing, and he suffered from headache and malaise. His pulse was 100, and temperature 100·2°. He appeared to be acutely ill. Examination showed a soft swelling on the right side, below the angle of the jaw. The throat looked œdematous, but there was no bulging on either side. Tonsils were not swollen. The glands on the right side of the neck were swollen.

On September 11th, the mass was incised. The pus showed sulphur granules in the gross. Stained specimen showed mycelium but no clubs. He was put on potassium iodide grs. x. t.i.d., and later the potassium iodide was increased to grs. xx. t.i.d. An abscess formed under the skin, and there was considerable swelling along the side of the neck, and the right side of the face. On September 19th, the abscess was opened in front of the ear. It was deeply seated, and contained a good deal of pus. On October 17th, no pus discharging. There was a small salivary fistula from the parotid. The patient felt well. He had been taking potassium iodide grs. xxx. t.i.d. for three weeks.

Case 3. F. T., farmer. Presented himself on November 30th, 1913. Was complaining of having noticed for four or five days, a lump under the left lower jaw. It was tender on pressure, but not painful. The throat was clear, and the teeth in good condition. December 4th, incised the mass. No pus found. Hard connective tissue. December 10th. Fluctuating mass in the midline of the neck. Next day a midline incision was made, and three ounces of stinking pus were obtained. Mycelium was found in stained preparations. Much bacterial contamination was also present. He was put on potassium iodide in increasing doses.

January 29th, 1914. Has taken the potassium iodide regularly, and has had three exposures to *x*-ray. The sinuses are healed.

Case 4. A. E. M. S., aged sixteen, boy. On October 9th, 1916, gave the following history:

Had an operation for appendicitis in April, 1915. Appendix was removed, and the wound healed in ten days. Two months later, the wound opened, and continued to discharge until the last of October. Had an operation in November, and the wound has been discharging ever since. Has only occasional pain. Boy appears thin and pale, and has lost twenty-one pounds. Urine showed a trace of albumen, but nothing of note microscopically. Blood showed reds 3,400,000, hæmoglobin 60 per cent, white blood corpuscles 11,000, polymorphs, 79 per cent., lymphocytes 18 per cent., endothelial cells 3 per cent. In smears, the reds were irregular in size and shape, and pale in colour. Barium meal showed nothing of note. Smears of pus showed mycelium of actinomyces, but no clubs.

Case 5. C. L., male, aged thirty-one. May 19th, 1918, Patient came complaining of a swelling just below the chin. Had noticed the mass for the last three weeks. Tumour was indurated and hard, but gave some fluctuation. Man appeared healthy. Temperature 98°, pulse 80. Physical examination was negative.

On May 23rd, the mass was incised under ether anæsthesia. Moderate amount of pus was evacuated. Sulphur granules were present. Smears showed mycelii of actinomyces. No clubs. He was put on gradually increasing doses of potassium iodide.

July 21st, has been taking 120 grs. of potassium iodide daily. More than this produces nausea. The mass is much smaller and there is no pus discharging.

Case 6. V. O. C., farmer, age forty-two. Presented himself on August 29th, 1914, giving the following history: On the morning of August 27th, 1914, he woke up with pain all over the abdomen. There was no vomiting. On the afternoon of August 28th, the pain became localized to the lower abdomen and was severe. There was not much pain on the 29th, but when he was examined on that evening, a mass the size of a large hen's egg could be felt in right lower quadrant. His pulse was 104, temperature 103°, at 8 p.m. As there was some tenderness throughout abdomen it was considered wisest to wait for further localization.

On September 5th, an incision was made and the abscess opened and drained; unfortunately no microscopic examination of the pus was made.

He was kept in hospital for a time and allowed to go home while the sinus was still discharging with instructions to return later for removal of the appendix. On December 9th, he returned with the sinus still discharging a little. A probe passed one and three-quarter inches.

On December 12th, 1914, an incision was made and the appendix amputated and the sinus dissected out. There was a good deal of thickening around the sinus and a good-sized piece of rectus muscle was dissected out in order to get away the thickened tissue. The wound was closed in layers. For a few days he ran an ordinary afebrile course, but on December 18th, as he had a rise of temperature, the wound was examined and as it looked swollen at one point, a stitch was removed and the lips of the wound separated; a small amount of blood stained pus was evacuated and a drain inserted. This gradually filled and he was allowed to go home about the 18th or 20th of January with his wound apparently quite healed.

On February 2nd, 1915, he returned and reported that on the day before the wound had discharged a quantity of pus. On examination there was an opening the size of a pea discharging thin pus.

On February 18th, the sinus was curetted and packed with iodoform gauze. The discharge continued and in March a specimen of pus was examined. The mycelii of actinomyces bovis was found. He was put on moderate doses of potassium iodide. On different occasions afterwards specimens of pus were examined and the mycelii found. No clubs seen at any time.

I may say that the microscopic examination made at the

time the appendix was removed, gives only the report—chronic inflammation with *giant cells* in the tissues surrounding the sinus.

June 9th, 1915. Has had potassium iodide in increasing doses, taking up to 110 grains per day.

Mass in and under the rectus, feels about one half to one third of what it did a month ago. Discharge is less. Sinus admits probe for one inch.

May 3rd, 1918. Completely healed since August 30th, 1917. Ventral hernia in wound.

Rheumatism and infections of the heart, kidneys and intestines are often closely associated with the condition of the teeth. It has been learned that these affections were most common in the Austrian and Italian armies, in which dental science was least advanced. No army had any superiority over the Canadian army with respect to the health of the men's teeth. Dr. C. H. Mayo says that "a crowned tooth is not a crown of glory, and may cover a multitude of sins." The really dangerous tooth is the dead tooth, the tooth from which the nerve has been removed. This tooth cannot ache, nor form an abscess, but there is always the possibility of germs remaining in it and laying the foundation of some illness that may incapacitate or cause the death of the victim without previous suspicion as to the cause of the trouble. Tonsilitis, earache, inflammation of the nasal cavities, deafness, eczema, rheumatism, blood-poisoning, are a few of the ills that modern science has traced to teeth that have never ached but have harboured germs.

THE RECENT EPIDEMIC OF PNEUMONIA—BEDSIDE FINDINGS AND SOME INFERENCES

By George S. Young, B.A., M.B.

Toronto

IF one could forget the word influenza there would be left no resemblance between the epidemic pneumonia of the last few months and that associated with other epidemics during the last thirty years. Looking over the literature of 1889 and 1890 one finds such statements as these: "The mortality seems greatest in those having old chronic ailments." "Broncho-pneumonia is more frequent than lobar pneumonia, but differs from the ordinary lobular pneumonia in that the exudate is richer in fibrin. It does not affect the lower and posterior parts of the lungs, but the upper and anterior parts." "There have been three times as many cases reported as last year, but the percentage of mortality has not increased." These statements certainly do not apply to the present epidemic with its mortality of upwards of half a million people in the United States alone, and these people, not old, but young and vigorous. A more significant fact is that in the descriptions written in the journals of that time, there is no reference to certain striking clinical features so noticeable in the cases of to-day.

The epidemic pneumonia of the last three months has varied in severity, from cases so mild that the diagnosis might be open to question, to those so rapidly fatal that there was scarcely sufficient time for the physical signs of consolidation to appear. The more serious cases, however, presented characteristics which make the disease a clearly defined entity differing from other epidemics described before. Of these, none is more remarkable than the absence of nature's usual effort to compensate for impaired function and to combat disease. In the presence of a pneumonic infection one would expect that the respiratory rate would be markedly increased to make up for the lung area out of

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commission. The pulse should rise to meet the necessities of the pulmonary circulation. One would look for an early and vigorous leukocytosis. This is precisely what we found in the pneumonia cases of other years. But in this epidemic it was common to find a comparatively slow pulse and respiration, the latter often being shallow, though painless. Even the temperature would sometimes drop to nearly normal on the invasion of a new area of lung. It is interesting to note that the temperature on the average was lower throughout the course of the disease than in lobar pneumonia.

Most of the serious cases, and many of the milder cases, could be recognized at once by the peculiar colour of the lips and tongue. Writers everywhere have endeavoured to describe this strange cyanosis, and such phrases as "the purple death", "lilac tint," "heliotrope shade," appear in the literature. This was associated with a dusky flush or a gray pallor according to the severity of the case. The cyanosis cannot be explained by cardio-vascular failure for it might be present with good heart sounds, an undilated heart and adequate systolic and diastolic blood pressure. Nor is it necessarily the result of the pulmonary involvement, since it was sometimes seen when physical signs of respiratory trouble were not apparent. A patient without cough showed this peculiar colour for two days before a single abnormal sign could be detected in the chest. The associated emphysema has been suggested as a cause, but we are not familiar with such a colour even in advanced cases of this kind under other circumstances. The only adequate explanation that can be given is, that the infection produces a rapid and profound alteration of the blood, such for example as may be found in carbon monoxide poisoning. In a few cases reported by Synott and Clark spectroscopic examination failed to reveal the presence of methæmoglobin. For the present it can only be said that the cyanosis is due to some unknown change in the red blood cells.

Writers all over the world have called attention to the hæmorrhagic tendency shown in this epidemic. Keeton and Cushman, in a report of about one thousand cases, place this feature as second in point of constancy, toxæmia alone being put before it. Epistaxis, bleeding gums, hæmoptysis, hæmatemesis, hæmaturia, petechial spots and hæmorrhage into the rectus muscle, are all mentioned. Women menstruated during the first two or three days of illness. Pregnant women usually aborted.

Probably most of us have been struck with the hyper-reson-

ance of the uninvoved portion of the chest in these cases. Even over areas showing bronchial breathing there was not always the dullness that one might expect. No doubt this was due to emphysematous lung lying between patches of consolidation. Occasionally a pneumothorax or subcutaneous emphysema would call attention to the intense pulmonary emphysema. This has not been as frequent here as in some parts of the States, where it was so common that in one recent report the epidemic was referred to as bronchitic emphysema.

Although albuminuria is probably more common in acute infections than we realize, it seems to me that in these cases the toxins affected the kidneys particularly. It was present in a large number of our cases in Toronto and has been noted elsewhere as occurring in about fifty per cent. of the cases.

The onset of the so-called influenza followed a short incubation period, not more than forty-eight hours. A patient became ill here in Toronto at the beginning of the epidemic and went home to his people in the country where at that time there were no cases. He arrived on a Friday night. The following Monday morning three more in the home were sick, and two or three days later the nurse who had come on the scene was also in bed. Three cases of pneumonia occurred, one of which was fatal. It was often difficult to say when the pneumonic process had begun. Some showed signs at the very beginning of the illness. A continuation of the temperature on the fourth day or a rise following a drop on the third day, even without physical signs, aroused suspicion of serious respiratory trouble and the suspicion was generally well founded.

The physical examination was often negative at first. Impairment of resonance was frequently masked by the accompanying emphysema. The breath sounds might be diminished over involved areas, but more important was the occurrence of fine râles at the end of inspiration. These were most often heard around the angle of the scapula, in any case generally over the lower half of the lung. The râles might not be brought out until the patient was asked to take a long quick breath or a deep breath with the mouth open. In examining the back it is worth while to use the stethoscope with the patient lying first on one side and then on the other. Râles may be found over the side nearer the mattress owing to the slight compression of the lung, whereas reversing the position may obliterate them. Of course these fine râles would have no significance unless they were persistent. We are all

familiar with the crepitations which appear and disappear in the first one or two deep breaths in patients with normal lungs who have been lying quiet for a time.

In many cases during the epidemic the physical signs never passed beyond this point, viz. fine localized râles, diminution of breath sounds with or without impairment of resonance. These might persist for a week or ten days, the patient well enough to complain about having to stay in bed. I am of the opinion that these were true cases of broncho-pneumonia with very limited involvement of the parenchyma of the lung. It is difficult to conceive of a bronchiolitis, which these signs at the very least indicated, without involvement of the alveoli in which these bronchioles terminated. This, however, is a matter of individual interpretation. The important point to be noted is that these mild cases, whatever we may call them, were unquestionably due to the same infection which produced the indisputable cases of pneumonia. How many of the so-called influenza cases showed these milder signs? The general practitioner alone could give an answer. From a review of the literature, and my own limited experience, I think it is safe to say that pulmonary or bronchiolar signs occurred in at least fifty per cent. of the cases of influenza, whether the more serious pneumonia developed or not. The significance of this will be referred to later on.

Following these early signs the next to appear in progressive cases was generally a change in the vocal resonance, i.e., an increasing clearness in the voice sounds, and as this could only be due to increased conductivity of the lung through consolidation, the diagnosis of pneumonia could be made positively, even though bronchial breathing was not yet definite. The advance of physical signs from there on is familiar enough. Sometimes several patches showing these signs would shortly become one large area with the physical signs of lobar pneumonia, but not often limited by the fissures of the lung. Practically always there were signs in both lungs showing various stages of development of the process, and generally the storm centre was around the angle of the scapula. Often there was little or no sign of bronchitis until after the finer tubes gave evidence of involvement. Clinically the coarser bronchitis often seemed secondary to the bronchiolitis, and it was difficult to picture the process as one of extension down the bronchial tree. One felt like regarding it as a blood borne infection with a selective activity for the pulmonary terminals.

Pleurisy, as indicated by a friction sound, was conspicuously

infrequent. In fact the occurrence of a rub seemed to point to a severe and wide spread involvement. Resolution was extraordinarily slow. One patient seriously ill had well marked signs of consolidation at the end of six weeks yet eventually made a good recovery.

It was rather surprising to find so little evidence of cardiac weakness. Even in critical cases the muscular quality of the first sound might be good and the second pulmonic sound well accentuated. The right heart was seldom enlarged to percussion. The vascular tone was low. Gibson's rule did not always hold good. In one case, for several days after the onset, the systolic blood pressure was never over ninety and yet the patient was not seriously ill and made a good recovery.

Active delirium was not so frequent as somnolence or stupor from which the patient could be aroused to answer questions rationally. It was not uncommon for a patient to express himself as feeling first rate within a few hours of death.

Now and again an atypical case would convey a hint of some of the other infections with which we are familiar. For example a fiery red pharynx might suggest a streptococcal infection, or rarely herpes labialis, the facial sign of the pneumococcus, might be present. A complicating empyema might be the work of the staphylococcus. These, however, were superimposed on the characteristic picture. They leave unchanged the conclusion that the present epidemic pneumonia is a clear cut, well-defined disease, apparently unknown before,* characterized by certain fairly constant features. These are the feebleness of nature's defensive reaction, the profound alteration of the blood, a marked hæmorrhagic tendency, an emphysema of an unusual character, early renal irritation, and a bilateral involvement of the lungs.

There is much to suggest that the micro-organism which initiates the so-called influenza, is also responsible for the pneumonia which so follows. In several reports of the epidemic the incidence of pneumonia has been given as about thirty per cent. of the total number of cases. If we add to these the cases showing only a few localized but persistent fine râles, then pulmonary involvement becomes a manifestation rather than a complication of the original infection. It is true that in the pneumonia cases

*Dr. J. H. Elliott has since called my attention to a book by Dr. Peabody published in 1848, describing the influenza epidemic of the preceding year. His description of the associated pneumonias corresponds fairly well with the findings during the present epidemic.

there have been found in the sputum, blood, and lungs, the organisms which are known to be associated with this disease, but sometimes one germ is present, sometimes another; and yet clinically all the cases are essentially alike. The pathologists confirm this. "The findings in the lungs are quite unique and strikingly similar, irrespective of the species of micro-organism present." (E. C. Rosenow.)

It would seem that there must be one single causative agent responsible for the common features of all the cases. If this is the bacillus influenzæ it has acquired a new selective activity. Its ancestors would not recognize it. To the clinician, at any rate, the conclusion is irresistible, that the micro-organism is not demonstrable by the present cultural methods. Meanwhile there is an opportunity for the study of the outstanding characteristic of the epidemic, viz., the remarkable blood dyscrasia, which is apt to be forgotten in the investigation of the pneumonic process which accompanies it.

Though written four hundred years ago, Leonando da Vinci's book on anatomy has only recently been published, and surgeons are only now discovering the marvels it contains. Professor William Wright lately lectured upon the work in London, England. He pointed out that when it was written the circulation of the blood, osmosis, oxygen, and the microscope were all unknown. All doctors believed that the arteries were full of free air and that the blood was ærated in the heart. The interior arrangement of the heart was also misunderstood. Leonando denied that air entered the heart, and wrote that the blood was "refreshed" in the lungs; he described accurately the anatomy of the heart and large blood vessels, and the action of the muscles of the chest and abdomen in respiration.

TERMINOLOGY OF MILITARY REPORTS

By J. A. Hislop, Major, C.A.M.C.

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I WISH to command your consideration for just a few minutes to present an old subject from a new angle.

Every professional man in practice is familiar, and in many cases proficient, in the matter of examining for life insurance. A medical man does not know this branch of work by instinct but by steady practice and making an honest effort to gain proficiency in the work. When we start practice we are inclined to think the form contains a lot of silly questions, some of us never get past this stage.

Again there are the examinations for compensation for injuries, as accident insurance. This form is often worded in such a way as to irritate any examiner, and probably is intended to do so; as few of us have any record of receiving any fee for satisfactory service and the effort appears to be directed toward evading payment. Since the Compensation Act came into force it is becoming more common for those hiring men to have them submit to a medical examination, so as to have on record their condition on entering service. This is not strange, but the marvel is, it was not done long ago, especially in occupations paid by the day. As a matter of fact this examination was in most cases carried out by the foreman and the success of the contractor often depended upon the foreman's diagnostic powers. However, this haphazard state of affairs is passing and the time is gradually coming when the medical man will be called, as a matter of routine, to pass upon all men for whom a liability is assumed, or from whom a definite physical performance is expected.

The military have taken this stand and the man is examined on enlistment and on discharge, and any disabilities, the result of service, are tabulated, and in a very modest way paid for.

When our army mobilized, the work of examining had, in the very nature of the case, to be performed by civilians, as the regimental medical officers were too few for the task. It at once became obvious that the profession were sizing men up from an in-

surance standpoint and not from an occupational one. This was the cause of much hardship in men being induced to leave their occupations and report for enlistment, only to be rejected later for obvious defects. However, that is past, and the time will shortly be here when our men will again be entering civilian life and again be under the care of the civilian practitioner, and it is to this time I wish particularly to call for your co-operation, and to ask you to exert yourselves to become more efficient and see that we, by a united effort in the last half of the series, raise the score which, up to the present, is against us.

The government in this case is the insurance company and the form you will have to deal with is known as "The Medical History of an Invalid". You will be furnished with a complete history of the disabling conditions, i.e., not an anatomical description of the cases, but a statement of his loss of functions.

The government acts in a paternal capacity and is anxious that the case be fully stated. The remuneration you will receive for all this will bear a remarkable resemblance to that paid by industrial companies, but I am sure you will feel compensated when you learn what the pensioner gets for his sacrifice and will feel gratified that you are able and are permitted to do your part.

We find there is a persistent tendency on the part of the examiner to give a detailed anatomical description of the injury, instead of stating the functional disability, and as this latter is essential to arriving at a basis of settlement there is great confusion and often delay. As the government policy is to have the injured man examined every six or twelve months it is necessary that the description and opinion coincide with those already recorded, otherwise the case is thrown out on account of conflicting reports. This is very apt to occur on account of the great lack of a common language or nomenclature among the profession, as one refers to the fore finger as the first finger, another to the little finger as the fifth, etc. Again some consider the hand in straight line with the forearm as being in full extension, while the next man assumes hyper-extension and full extension as synonymous. This leads to confusion, especially when the description states the hand or fingers can be moved through, say thirty degrees from a point which is so indefinitely defined. Again we have no accepted standard in describing the power of the grasp; what would be normal in one would not be a basis of description for the next. Also "dyspnœa on exertion", is it slight, moderate or extreme in degree and is it produced by slight, moderate or extreme exertion.

You will see we have no commonly accepted physical exercise to quote as a standard, some state climbing two flights of stairs, another, physical training, as touching the toes six times, leaving out the time in which this exercise was performed. There is a great diversity of opinion as to what is a correct angle for an ankylosed joint as, say the elbow. Also the term "rheumatism" is too often and too vaguely employed, and there is a tendency to forget to mention the effect of extremes of temperature, following impairment of circulation, locomotion, or sensation.

If possible use the official nomenclature, a copy of which can be obtained on application. Avoid vague terms. If more than one disability exists, number each and give each a separate consideration. Describe all abnormalities and state manner in which they interfere with earning capacity. When other systems are normal, say so without description. Give objective symptoms rather than the man's complaints. In most cases the subjective symptoms can be made objective by a little care on the part of the examiner. The more clearly and precisely the picture is drawn the more readily the case can be finally dealt with. Give the source of all information other than your own, and in estimating the incapacity take no consideration of his present or past occupation, nor his age or income. It is his incapacity in the general labour market for unskilled labour that counts. This is probably a little vague and some prefer to estimate it from the number of occupations his disability would exclude him. As for instance, a man who had a shocking facial deformity with probably very slight loss of function, as say the loss of the nose, would to a great extent be excluded from any occupation which would require his meeting the public.

In an effort to arrive at a standard basis of settlement the government compiled a list of disabilities and submitted it to the different casualty companies asking them to state the extent of disability in percentage. The result shows a great diversity of opinions, in many instances too wide a gap. This indicates it is high time we, as a body, were giving the matter our earnest attention, especially as it is reasonable to assume the casualty companies will be forced to accept the standard agreed upon and the government is very anxious to get the matter settled definitely for once and all. I would therefore urge you gentlemen to take the subject up seriously and become posted, so as to aid us in the immense task of adjusting the claims of those who have suffered through accident at home or on service abroad.

INDUCTION OF LABOUR

By F. W. Gershaw, M.D., C.M.

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IN this brief paper I wish to discuss some points which arise in considering the question of induction of labour at maturity or about that time.

With habitual death of the fœtus in the last weeks of pregnancy, induction shortly before the date at which the fœtus usually dies (if syphilis is not the cause) often proves satisfactory. At present we cannot tell accurately enough when the fœtus is in danger and trust to arriving at the date by previous experience.

In acute febrile diseases this operation is very seldom indicated. It would probably save some children, but the maternal mortality would be increased. If the fœtus is dead in utero the operation is generally advisable, especially if there is any evidence of septic absorption, which will be extremely rare.

In case of a viable child should labour be induced in the interest of the child when the mother is dying? It is, of course, extremely trying on the operator's feelings to operate on a dying woman, but if it is clearly established that the mother's condition is hopeless and the child is living, it would be the duty of the doctor to empty the uterus (perhaps by Cæsarean section) before, rather than after the mother dies.

With chronic Bright's disease or cases of toxæmia with threatened eclampsia one should interfere, when in spite of treatment, pronounced symptoms, such as severe headaches, disturbances of vision, progressive diminution of quantity of urine, and in the output of urea, are present. In eclampsia the uterus should be emptied, usually by Cæsarean section, if the symptoms continue after the ordinary medical treatment has been given a trial. In cases where a large amount of albumen persists for a long time labour should be induced when the child is viable, as there is great danger of chronic cirrhosis of the kidney being established. Icterus calls for the induction of labour. In case of valvular disease of the heart the condition is different as there is great danger of

cardiac failure during or after parturition. Therefore most writers are very loathe to induce labour unless forced to do so by the patient becoming steadily worse in spite of treatment.

The individual cases must be studied in cases of tuberculosis, leukæmia, pernicious anæmia, Grave's disease, and chorea. With hydramnis interference with pregnancy is often indicated. I recently induced labour by rupturing the membranes in a patient with this trouble whose abdominal measurement reached sixty-four inches. The mother made a good recovery. It was a twin pregnancy and each child had a goitre. They seemed vigorous at first but both died in a few days. A very small opening was made in the membranes so that the many gallons of water escaped slowly. In cases of contracted pelvis where the conjugate vera is less than three inches, Cæsarean section will be required. Where the measurement is from three and one quarter to three and one-half inches induction of labour in the thirty-five or thirty-sixth week would seem to be most desirable. When the conjugate is over three and one-half inches, spontaneous delivery takes place in 65 per cent. of cases. Forceps and occasionally pubiotomy is the most suitable treatment for the remaining 35 per cent. of cases.

Most operators who employ induction of labour in contracted pelvis are disinclined to perform the operation in primagravida. They prefer that the first labour should be a trial labour and later labours induced if special difficulties were met in the first. Spontaneous delivery is more likely to take place in twin pregnancies on account of the smaller size of the babies.

It is the adaptability of the fœtal head to the maternal pelvis which makes normal birth possible, therefore it is important to know the size and the maturity of fœtus in utero. Most authors test the relative size in the thirty-sixth or thirty-seventh week by forcing the head down into the pelvis brim. If it is found to be too large at that time, labour is induced, if not, the patient is left for another fortnight. Because of the forcible manipulation required I have never had the courage to give this method a satisfactory trial.

Several other ways have lately been devised for measuring the size of the fœtus. In the Perret method the biparietal diameter of the fœtal head is measured. This can only be done when the head is freely floating above the symphesis, and as soon as the head enters the birth canal the method is not applicable.

In the McDonald method the distance is measured with a tape line from the symphesis pubis to the uppermost point of the fundus.

This seems rather uncertain as in the later months of pregnancy the vertex may be much below the symphesis.

The Ahlfeld method appears to be more valuable. This method is based upon the fact that the fœtus at maturity is fifty centimetres, or twenty inches in length. Reed, of Chicago, has recently emphasized that the length of the fœtus rather than the weight is the best index for determining the maturity. Ahlfeld pointed out that the true length of the child is twice the measurement of the distance from the vertex to the buttocks of the child in the position normally assumed in utero. This he determined by measuring externally with a pelvimeter from the upper border of the symphesis to the uppermost part of the buttocks as palpated through the abdominal wall. Herbert Thoms, of New Haven, Connecticut, has devised a modification which is of great value. With the patient on her back, or in the lithotomy position, one finger is passed into the vagina to the fœtal head in the anterior fornix. An assistant with a pelvimeter now measures the distance from the uppermost part of the buttocks to an easily available point on the examining hand, outside the vulva. Withdraw the hand, measure the distance from this point to the end of the finger and subtract this from the first measurement. This will give the distance from the vertex to the buttocks, or half the length of the child.

I have recently measured about twenty cases in this way and found the results surprisingly accurate when the baby was measured after birth.

Charles B. Reed, of Chicago, induces labour in two thirds of his cases. From his measurements, as just described, he decides on the date of maturity. He has the patient enter the hospital on that date, introduces a rubber bag and gets the labour over. The average time being eight hours and eight minutes. We would not all agree to any procedure so radical. Good results may be obtained in perhaps ninety-nine cases out of every one hundred by ordinary methods, but it is the hundreth case we try to save. By these tests, cases of protracted gestation, and cases where the child is abnormally large from other causes, could be recognized, labour induced, and the end results much improved.

Just a few words about the means used to induce labour. The patient may be put in the lithotomy position, a douche given, a speculum introduced, the cervix gently drawn down, the gloved finger introduced, and the membranes separated as far as can be reached with the finger. A large dose of castor oil is given, and

as soon as the bowels begin to act twenty to twenty-five grains of quinine in divided doses. The danger of sepsis from this method should be very slight.

In the few cases in which it fails, the membranes may be ruptured, or a bougie introduced by Krause method, after which the cervix and vagina are packed. Labour will start in about thirty hours after either of these methods.

The annual report of the Provincial Hospital of Nova Scotia, recently issued by Dr. J. V. Anglin, medical superintendent, states that the number of cases under care and treatment during the twelve months totalled seven hundred and ninety-four. In addition the military authorities requested the institution to take in soldiers belonging to the district, who suffered from mental ailments, so that, throughout most of the year, from ten to fifteen such cases had been looked after. Of the one hundred and sixty cases admitted the past year, one hundred and forty were natives of the province; one hundred and forty-eight were Canadians by birth, twenty-seven were of Acadian stock; one hundred were Protestants. Since the hospital was opened for mental patients the total number admitted has been 8,430; men 4,840, and women 3,590. Of this total 3,291 cases have left the hospital apparently restored to health, and 2,801 persons have died, the majority after years of residence.

A FURTHER REPORT UPON DIPHTHEROID INFECTION OF WOUNDS

With a Note Upon the Frequency of Diphtheroid Bacilli in Cases of Urethritis and Prostatitis

By R. M. Janes, M.B., *Captain, C.A.M.C.*

and

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ABOUT four months ago a routine investigation of wounds infected with diphtheroid organisms was begun here, with a view to corroborating, or otherwise, the combined report of Canadian pathologists recently published in June, 1918, in the *Bulletin* of the Canadian Army Medical Corps, and then undergoing publication. This report was compiled as a result of an article which appeared in the Journal of the Medical Association for September of 1917 by Majors J. G. Fitzgerald and D. E. Robertson, of Toronto. In view of the fact that practically all of the cases sent to this hospital showing open wounds had some bone injury, and had, in many cases, undergone prolonged treatment in primary hospitals before being sent here, it seemed that we were dealing with a type of cases not available for investigation in most military hospitals. It is also of interest that these are the cases which are being returned to Canada while their wounds are continuing to discharge, and that they are, therefore, much the same type of case as those reported on by the Toronto investigators, and perhaps differed somewhat from the cases examined by the investigators of the combined report.

The following technique was employed: A sterile cotton swab was rubbed well over the surface of the wound and sent to the laboratory by the medical officer in charge of the case. This swab was planted on a tube of Lœffler's blood serum, and the inoculated tube incubated for a period of eighteen hours. Smears were then made from the growth obtained and stained

with methylene blue, as well as by Gram's and Neisser's method. This was carefully searched under the microscope for Gram-positive bacilli showing diphtheroid arrangement. If diphtheroid organisms were found a loopful of growth from the original culture, at a place where the majority of the colonies were of the character of those produced by diphtheroids, was emulsified by thorough shaking in a tube containing about 4 c.c. of bouillon. A loopful of this broth was then smeared on a plate of neutral nutrient agar, which was incubated for twenty-four hours, when suspicious colonies were fished. If no likely colonies appeared the process was repeated, and this time a loopful was also smeared on a plate of Lœffler's blood serum, as *bacillus diphtheriæ* are occasionally hard to grow on agar. The agar was used as routine because, being a transparent medium, it is easier to fish the colonies, and, moreover, the diphtheroids grow quite well on it. Any suspicious colony was inoculated on a tube of Lœffler's blood serum and the tube incubated. This growth was next day examined for purity, and, if pure, the sugar tubes inoculated from it. Sugar reactions were always carried out on Hiss's serum water, to which 1 per cent. of the desired sugar was added. Before the sugar reactions were finally read each tube was planted again on agar, in order to ensure that latent contamination had not occurred. Sugars were incubated for four days before final readings were taken. It was found by experience that this time was quite sufficient.

Characters of Growths

On plain agar diphtheroids produce in twenty-four hours small pin-head colonies, translucent and lenticular on naked-eye examination, under the low power of the microscope appearing finely granular, with a slightly irregular margin. On Lœffler's blood serum, colonies have the same general characteristics, but grow somewhat larger. Colonies always tend to remain discrete.

Pure cultures of diphtheroids on serum slants are more profuse than the growths ever obtained with true Klebs-Lœffler. Cultures kept at room temperature develop the creamy appearance noted by Captain Adams in the combined report. The growth is moister than that of Klebs-Lœffler, and in some cases, where heavy, becoming almost slimy. Cultures of *bacillus diphtheriæ* kept under similar conditions do not lose their characteristic appearance. Similar to Klebs-Lœffler cultures, those of diphtheroids can be kept for at least four months, and at the end of that time good growths are obtained on subculture.

We have been unable to detect any consistent difference between the morphology and staining of diphtheroids and true Klebs-Lœffler bacilli. All strains of the former encountered by us stain well by Neisser's method, although usually the granules are larger. Generally speaking, diphtheroids are shorter than *bacillus diphtheriæ*. Grown on different media, they show the pleomorphism so characteristic of Klebs-Lœffler.

All the diphtheroids which we have isolated from wounds have produced acid from dextrose, lactose, saccharose, maltose, lævulose, galactose, and have failed to ferment dextrin and mannite. Acid production in lactose is somewhat slower than in the other positive sugars. They may all be considered as falling under the *bacillue hoagi* type (Morse, 1912). One diphtheroid isolated from an acute otitis media complicating a case of influenza during the recent epidemic showed the sugar reactions of true *bacillus diphtheriæ*. On animal inoculation it proved avirulent, and belongs, therefore, to the class of *bacillus quasi-diphthericus* (combined investigation). Sugar reactions have been controlled on each batch of sugar media prepared by cultures of Klebs-Lœffler isolated from the throats of clinical cases of diphtheria. These have always fermented all the above sugars with the exception of saccharose and mannite.

For animal inoculation a twenty-four hour neutral broth culture has been employed. Guinea-pig No. 1 was inoculated in the subcutaneous tissue of the abdomen with 2 c.c. of the culture. Guinea-pig No. 2 was similarly inoculated with 2 c.c. of culture, which, however, had remained in contact with 1,500 units of diphtheria antitoxin at room temperature for a period of one hour. In the case of wound diphtheroids of a few pigs, No. 1 showed slight œdema after twenty-four hours, amounting to a tumour as large as a bean. But no general reaction was observed in any case. At the end of three days this local reaction had always subsided. In the case of true *bacillas diphtheriæ*, death of pig No. 1 occurred in from twenty-four to seventy-two hours. Pig No. 2 showed no local or general reaction. Autopsy findings were in all cases typical. Virulent Klebs-Lœffler was in one case isolated from the pleural fluid of a pig which had received *bacillus diphtheriæ* isolated from a wound. (It may be noted that the pleural effusion consisted of clear, straw-coloured fluid, not bloody fluid, as reported by some observers.)

In all we have examined swabs from one hundred and twenty-nine cases, eighty-two of which, or 63·5 per cent., showed diph-

theroid organisms. Of these, thirty were isolated in pure culture at intervals during a period of four months. Three of these proved to be true Klebs-Lœffler, and twenty-seven wound diphtheroids—that is, 10 per cent. of the isolated organisms were *bacillus diphtheriæ*, and assuming that this is a fair proportion, 6·4 per cent. of the wounds were infected with *bacillus diphtheriæ*.

We give below brief clinical notes on the three cases infected with *bacillus diphtheriæ*, and on three infected with wound diphtheroids.

Case 1. No. 1005736 Pte. T., wounded, Passchendaele, November 11th, 1917. Shrapnel wound, outer surface of left arm. Wound excised and dressed at casualty clearing station the same day. Although the original wound was small, it continued to discharge until March, 1918, when it healed, leaving the arm apparently well in every way. About the first week in May, 1918, wounded area became swollen, red, painful, and tender. Swelling incised, much pus freed, and a piece of shrapnel came away in the dressing. The wound continued to discharge, and considerable sloughing took place, leaving a dirty ulcer. A swab taken May 20th, 1918, shows the Klebs-Lœffler. The following note was made on his medical history sheet one week later: "Ulcer slightly larger than a half-crown, with a granulating, red base. Slight purulent discharge, slightly offensive; edges of wound are overhanging, but healthy. There is no local tenderness, pain, or redness. Epitrochlear gland is swollen and tender. General condition of patient good." This patient was returned to Canada, being on his way before the organism was proved.

Case 2. Pte. S. Following shell wound right leg, at Passchendaele, October 10th, 1917, laid out in "No Man's Land" for five days. He contracted trench feet, and later gangrene of the right leg and toes and heel of left foot occurred. Right leg and four toes of left foot were amputated November 11th, 1917. In February, 1918, remaining toe was amputated and stumps of toes and left heel cleaned. The wound continued to discharge, and heads of metatarsal bones of third and fifth toe were removed on March 5th, 1918. Up to this time eusol and Carrel-Dakin fluid were used for dressing. On March 13th, 1918, swab from wound showed diphtheroid bacilli, later proved to be true Klebs-Lœffler, along with streptococcus and staphylococcus. At this time the following description of the wound was entered: "Copious quantity of yellowish-white pus discharging, and wounds shows definite membrane, swelling and œdema extends beyond the ankle. Pa-

tient complains of very little pain." Dressings were now changed to flavine three times a day, with bichloride baths. 5,000 units of diphtheria antitoxin was administered, followed, however, by rather severe anaphylaxis. No sensitizing dose was given in this case. Progress under this treatment was rapid, and on April 30th, 1918, the following note was made on his medical history sheet: "Very slight discharge; healthy granulations cover the base of the wound. Epitheliation is proceeding rapidly along the margin." Progress was marked to complete healing.

Case 3. No. 790639 Pte. C. Received shrapnel wound of right forearm, with comminuted fracture of the ulna, on February 13th, 1918. Progress of the wound was, apparently, slow. On May 5th, 1918, had operation, with removal of scar, sequestra, and shrapnel fragments. Wound stitched, and an iodoform gauze drain inserted. Five days later a note on medical case sheet states: "Wound healing nicely. No purulent discharge (except where drain is applied)." Progress was rapid for about three weeks, when healing slowed up. On June 21st, 1918, a swab from wound showed diphtheroid bacilli, later proved to be true Klebs-Lœffler. At this time wound had progressed to a superficial ulcer, which showed a definite firm membrane, and exhibited no tendency to heal. Flavine dressings three times a day were now instituted, and 6,000 units of antitoxin administered, three days later 5,000, and two weeks later 10,000 units. (A sensitizing dose of one-half-cubic centimetre of serum was administered before the first dose of 6,000 units. No anaphylactic reactions were obtained.) The membrane showed some tendency to loosen after each dose of antitoxin, but healing was slow, and swabs from the wound taken at intervals up to the time when complete healing occurred on July 21st, 1918, showed pure cultures of *bacillus diphtheriæ*.

Case 4. No. 781344 Pte. McD. Sustained shrapnel wounds at Passchendaele, October 26th, 1917, affecting anterior aspect left shoulder, and left side of neck; the damaged tissue was excised at casualty clearing station, and later, after removal to base, some necrotic bone taken from head of humerus, and free drainage of pus established, which had collected in lower angle of scapula. At this time contracted erysipelas in left arm, but following this wounds began to improve gradually.

On admission to the hospital May 7th, 1918, the shoulder wound extended from below middle of clavicle to the outer part of the upper third of arm, with some discharge. *X*-ray report indicated shrapnel fracture involving head of humerus, with some

fragments in this region and in soft tissues about glenoid. Entry of June 8th, 1918, on medical history sheet states wound has unhealthy look, with greyish, dry membrane covering same. On this date we had occasion to examine this wound, and found the membrane to be rather firm, thick, and extending practically over the entire wound. Several swabs were taken from the edges of the membrane, cultures of which revealed streptococcus and an organism typically Klebs-Lœffler in morphology and staining. Pure cultures of the latter gave sugar reactions of wound diphtheroid and not *bacillus dtphtheriæ*. Wound treated with flavine, the membrane later coming off with the dressing, leaving a sound granulating base. Patient later invalided to Canada.

Case 5. No. 719696 Pte. S. Flanders casualty of October 26th, 1917, by rifle bullet. Wound of entrance 2 inches below head of right fibula, and of exit inner side of upper third of adjoining bone. These were cleaned and bones set in casualty clearing station. Later, at base, wounds incised for free drainage of pus and splints applied, leaving window for dressings. On reaching this hospital patient had a discharging wound on inner side of head of tibia, $2\frac{1}{2}$ inches below knee-joint; *x*-ray revealed cavity in inner surface, upper end of tibia. Wet bichloride dressings and rubber drainage applied. On June 19th, 1918, developed scarlet fever. Bacteriological examination of wound swabbed at this date showed staphylococcus and a diphtheroid. Pure culture of latter proved to be a true wound diptheroid. Wound healed later, and general condition of patient much improved.

Case 6. No. 215679 Pte. N. Received gunshot wound, left leg, November 10th, 1917, with fractures of the tibia and fibula. The leg was opened and drained and shrapnel removed at casualty clearing station. Wound apparently never completely healed, and on March 14th, 1918, a note on medical case sheet says: "Middle portion of wound on anterior surface of leg still discharging." *X*-ray report a few days later says: "Areas of rarefactions, sequestra, and shrapnel dust still present." It was not thought wise to attempt operation, because the wound showed a tendency to flare up every few days. On April 4th, 1918, scar tissues were dissected away, necrosed tibia curetted, and several small sequestra removed. A swab from wound on May 5th, 1918, showed diphtheroid bacilli; later proved to be true wound diphtheroid. At this time there was a scar 7 inches long on antero-internal surface of left leg, with a small unhealed portion on the centre, from which a sinus led to another opening on the antero-external

surface. There was a slight purulent discharge. Flavine dressings three times a day were instituted, and the progress of the wound was satisfactory.

It will be seen from a summary of the above case reports that wounds infected with diphtheroids differed in no wise clinically from those from which true *bacillus diphtheriæ* was obtained, except that they were, perhaps, more amenable to treatment. It will be noted that membranes were found in both types of cases. The three cases of diphtheroid infection are reported as a fair representation of all the cases we have examined.

During the conduction of a large number of bacteriological examinations for the venereal clinic here we have been struck by the large number of chronic cases of urethritis, littritis, and prostatitis, showing diphtheroid bacilli as the predominant organism.

Of one hundred and eighty cases examined, one hundred and five, or 58 per cent., showed diphtheroid bacilli. We have isolated seven cultures from the above, and these show the same morphological staining and cultural characteristics, also sugar reactions, as the wound diphtheroids. We have seen at least a few cases of acute urethritis due to diphtheroid organisms, and are of the opinion that in chronic infections of this locality these organisms are extremely important. It is also of interest in suggesting a possible source of at least some cases of diphtheroid infection in wounds. The first, to our knowledge, who called attention to the existence of urethral diphtheroids was Hine in 1913,* but we were unprepared by anything we have encountered in the literature to find them so common in the male genito-urinary tract.

Summary

1. 63·5 per cent. of open wounds examined in this hospital have shown diphtheroid organisms.

2. Judged from those cases in which pure cultures were obtained, 6·4 per cent. of open wounds in this hospital show infection with *bacillus diphtheriæ*.

3. Clinically, it is impossible to diagnose between diphtheroid and true diphtherial infection of wounds. A membrane does not necessarily indicate the presence of *bacillus diphtheriæ* wounds.

4. It is not possible to distinguish between diphtheria bacilli and wound diphtheroids by morphological characters.

*Jour. of Pathol. and Bact., 1913, 18, 75.

5. Only by sugar reactions obtained from pure cultures can diphtheroid organisms be distinguished from true Klebs-Lœffler and only after positive animal inoculation is it advisable to diagnose diphtheria in wounds.

6. Flavine appears to have given better results than any other form of local treatment used here.

7. It is advisable to administer diphtheria antitoxin in cases of diphtheria in wounds; here the importance of giving a sensitizing dose in cases of war wounds due to their having received previous injections of serum is emphasized. If this rule is not followed severe anaphylactic reactions will occur in some cases.

A Campaign to raise $100,000 to aid the Laval Tuberculosis Hospital has been inaugurated in Quebec. Two large public meetings have been held which were attended by crowded audiences of representative citizens. Among those who addressed the meetings were the Lieutenant-Governor, the Auxiliary Bishop of Quebec, Mgr. Roy, the Premier of Quebec, the President of the Laval Hospital Board of Directors and others. The object of the campaign was explained by Grand Knight Turgeon, who opened the first meeting in St. Peter's Hall. He told how the directors of the Laval University had come to the Knights of Columbus in their dire need of assistance to pay off the debt of the institution, and help them to carry on this great charitable work in the interests of humanity. He pointed out that the Laval Tuberculosis Hospital was free to all, irrespective of creed or nationality.

PROPOSED REVISION OF CONSTITUTION AND BY-LAWS OF THE ASSOCIATION

By H. B. Small, M.D.

Ottawa

IN 1908 our present by-laws were adopted and an entire change made in the policy and work of the Association. It was then we entered into our affiliation with the Provincial Associations; the publication of the Journal was begun; and an annual fee imposed upon all members.

These changes were not due to any sudden inspiration. They had been gradually forcing themselves upon the notice of our members. The membership had greatly increased; the attendance at meetings had doubled and trebled; and it had become evident that a more active and responsible course must be pursued. Probably that which had the greatest influence in promoting the change was the opening of the Western Provinces and their assumption of a provincial status. This placed all health and medical affairs under their jurisdiction and there quickly followed the formation of Provincial Medical Associations, which completed provincial organization throughout Canada.

A changed environment for our Association then prevailed, and, as the parent society, we realized our responsibilities. We became the central connecting body, binding all together, and with the enthusiastic support and affiliation of all the Provincial Associations, our new constitution was established.

The constitution we adopted has served our purpose in a remarkable degree, but during the intervening ten years, certain amendments and additions have been made from time to time, many details have been found inefficient, and experience has shown where improvement in our procedure may be effected. In the proposed revision it will be found that there are only a few changes of any importance. It is rather a re-arrangement, which includes the amendments that have been adopted, and advantage has been taken of the opportunity to make such changes as experience has taught us to be desirable; by-laws that have proved defective have

From the presidential address delivered at the combined meeting at Hamilton, Ontario, June, 1918.

been made more definite and others have been amplified to facilitate the work of the Association.

Constitution. In the Constitution there has been added a clause providing for the adoption of a Code of Ethics and its proper presentation to all members. Many years ago we adopted the code of the American Medical Association, and, in turn, our affiliated associations have accepted that of our Association. but nothing has been done to keep in touch with any alterations or amendments to the original Code and the whole matter has fallen into neglect. It is unnecessary to dwell upon the desirability of having a proper guide and the necessity of keeping it prominently before the profession. There are many who have never had an opportunity of becoming familiar with its tenets, and there are many others who are not aware of its existence. Its importance is such that I would suggest the appointment of a special committee to consider the whole matter and prepare an up-to-date code for the guidance of the profession in Canada.

Another addition is the introduction of a clause forming the past-presidents of the Association into a Judicial Committee. To them will be referred all subjects of dispute between individual members, or affiliated bodies, and such other matter as may be thought proper by the Association. As constituted, this committee should have the confidence of all. It will be in a position to report in an unbiased and impartial manner, and will remove from the general meetings all matters that might lead to dissention and discord.

Administration. The general management, as heretofore, is vested in the Executive Council. Our experience has confirmed the advantage of this small responsible body in carrying on the business of the Association. The important feature that all must bear in mind is the careful selection of the members of this Council, and that responsibility rests upon the individual members of the Association. There have been many complaints of our present by-law for the selection of this committee, and many other methods have been suggested, but it is not thought advisable to make any material change. The chief objection has been that members, who are actively interested in the work of the Association, and familiar with its details, may be unavoidably absent from the annual meeting, and cannot be elected. To overcome this very evident defect, the by-laws now allow the Council to elect three additional members whom it may consider desirable and who may render good service during the interval between the annual meetings.

Membership. Closely associated with and dependent upon our

membership is the condition of our finances. As the annual fee of our members is our only source of revenue, it is evident that our membership must be increased three and even four-fold. All our efforts are hampered by the want of funds. We should be in a position to maintain at least two officials sufficiently recompensed to give their whole time and energies to the Association. Our JOURNAL, which we had hoped would have been a source of revenue, has proved a financial burden. A contract to last ten years has bound us hand and foot, and the JOURNAL is issued at a loss. Fortunately the contract is nearing an end, and it is to be hoped that a more advantageous agreement may be reached, and a more popular publication issued. There are many ways in which we may augment our membership, but there are none that would be as effective as to have each affiliated association make our JOURNAL its official organ.

Committees. Our general sessions and our several sections have been satisfactory at all times, but the same cannot be said of our Committee work. There have been exceptions. Many Committees have presented reports, that have borne the impress of ability and of much care and study, but taken generally, they have not received the attention that their importance demanded, and too often no report has been forthcoming. These reports should be a most valuable and influential part of our work. We can conceive the Legislative Committee each year reporting all new laws and any changes in each province that may affect the profession or of any change that may be proposed. The same in regard to the work of the Educational and other committees. Such reports, carefully prepared and annually published, would furnish the latest information upon each special subject. In the course of time each would become a chapter of historic interest and be invaluable for reference.

Sections. At the annual meeting, the general session for the reception of addresses, etc., and the formation of sections, will remain as hitherto; but it is proposed that certain changes be made in the management of the sections. At present a new Chairman and Secretary is appointed each year by the local Committee of Arrangements. Those selected may have very little knowledge of of the work of their section, and not be conversant with the duties required of them. Under the new by-laws the Sections become of a more permanent character. The officers are selected by the members from among themselves. They will be elected at the close of the meeting for the following year, and will be responsible for the work of their respective sections. The purpose of this change

is to enable the section to select those who are particularly interested in its work, and thus secure a greater continuity of work than under the old method.

Associate Societies. Medical Associations are our only affiliations. The question has recently arisen as to the affiliation of other bodies, having a like purpose, but including laymen in their membership. As the fundamental principle of our Association is that its membership should be restricted to the members of the medical profession, it is impossible to approve of such a union, but it would appear reasonable, and even desirable, that we should be allied with associations working on lines similar to our own; particularly when they have the benefit of laymen who may have special qualifications, and who view the problems from a different standpoint to our own. There does not appear to be any reason why they should not be accepted as Associated Societies, and whilst each carried on its work independently of the other, by the receiving of delegates, we would learn of work accomplished and of any special purpose they might have in view. The Canadian Public Health Association, the Canadian Associations for the Prevention of Tuberculosis; the Canadian Association on Mental Hygiene; and many such, are doing good work gathering the opinions of the public better than we have an opportunity of doing, and might become associated with advantage to all.

These are a few of the more important changes that have been thought necessary. There are probably many details that are not sufficiently clear, and should be more definitely stated, or some important matter has been overlooked and omitted. It is desired that whatever the criticism may be, suggestions of improvement should be forwarded to the committee, that they may be given proper consideration before the next annual meeting, when the whole subject will be finally dealt with.

If we grant that our organization is complete, our Executive and Committees working efficiently, and that our ideals are attained, is our work to cease? Are we to be content with the annual gathering, and our interest to lapse for another year? Should each one rest satisfied with papers and reports presented by others, and take no part in promoting the work of our Association? Its success and standing, the quality of its work, and the influence it exerts, is dependent upon the individual members. To accomplish anything, it must have their personal interest in the routine work. But attention must not be restricted to medicine and surgery. It should range into the many allied subjects of socio-

logical interest which rightly are part of our work; public health in its various aspects; housing problems; child welfare; prenatal and maternal care; and the mental, tubercular, and venereal plagues.

It is one of our proud boasts that the profession of medicine is something more than a money-making vocation; that our ideals are high, and that our daily life and service are toned and softened by their influence. The training received during the study of medicine, the independent, untrammelled, yet busy college life, crushes petty foibles and broadens our outlook upon life. Add to this the experience gained during years of practice, and there results a wealth of wisdom too often unrecognized. It follows that upon the many questions of national importance the members of our profession are best fitted to advise. Untrained laymen, earnest in their endeavour, are struggling with these questions. We must not forget that governments have enacted laws for our benefit, many privileges have been accorded the profession, and in return there is imposed upon each one a duty and a responsibility to his country.

The same obligation falls upon our Association as a corporate body, and this phase of our work has been sadly neglected. We have not recognized the importance of our Association, and have failed to place it in the position it should occupy in the national life of Canada. As the representative body of the profession, it is our duty to offer an opinion upon these public questions that should be final. Our pronouncements should be sought for, not only by the public, but by authorities and by governments.

In these changing times, and in the greatly changed world that is to follow this war, many weighty and vexed problems will have to be solved. Many may be satisfied to leave the burden upon those in authority, but a share of responsibility rests upon each one of us, and to each falls a share in the moulding of what is to be. The more varied his opportunities and the greater his ability to lead, just so much more must he respond to the call of duty. The financial, commercial, and labour forces are preparing for the change, but the sociological problems are not as yet properly approached. It is here that the views and opinions of the profession of medicine will be most valued, and the influence of the individual member makes him one of the strongest forces in forming public opinion. The principles of national efficiency are now being fully appreciated. The public is beginning to realize that many of the pet fads, which in the past have fitfully interested the well-meaning, are really of the greatest importance in the upbuilding of our country.

PROPOSED REVISION OF THE CONSTITUTION AND BY-LAWS*

CONSTITUTION

Article I.—Title.

This society shall be known as the Canadian Medical Association.

Article II.—Objects.

The objects for which the Association is established are the promotion of the medical and allied sciences, and the maintenance of the honour and the interests of the medical profession by the aid of all or any of the following:

(*a*) Periodical meetings of the members of the Association in different parts of Canada.

(*b*) The publication of a periodical journal which shall be the official organ of the Association.

(*c*) The occasional publication of transactions or other contributions to science.

(*d*) Grants of sums of money, out of the funds of the Association, for the promotion of the medical and allied sciences in such manner as may from time to time be determined.

(*e*) And such other lawful things as are incidental or conducive to the attainment of the objects of the Association.

Article III.—Code of Ethics.

The Code of Ethics of the Association shall be such as may be adopted by the Association from time to time. An official copy shall be kept in the possession of the secretary and shall be open to inspection at all times. A copy shall be sent to all members upon joining the Association.

*Prepared by the committee nominated at the Hamilton meeting, June, 1918.

Article IV.—Membership.

The Association shall be composed of ordinary and honorary members. Ordinary members shall be (*a*) regularly qualified medical practitioners who do not subscribe to any special dogma, and (*b*) those engaged in teaching or research work.

Honorary members shall be persons who have distinguished themselves and have risen to eminence in medicine or the allied sciences.

Article V.—Affiliated Societies or Associations and Branch Associations.

All Provincial, Inter-Provincial Medical Associations or Societies and other Medical Bodies, may, by special resolution of said Medical Society or Association, become branches of or affiliated with the Canadian Medical Association, by subscribing to its Constitution, By-Laws and Code of Ethics, and by securing the approval of the Executive Council. They shall submit a copy of their Constitution and By-Laws and such amendments as may be made from time to time.

Article VI.—Meetings.

The meetings of the Association shall be held annually at such time and place as may be determined by the Executive Council; and upon such other occasions as may be considered desirable.

Article VII.—Officers.

The officers of the Association shall be a President, a Vice-President for each Province, a Secretary and a Treasurer, and an Executive Council, to be elected in accordance with the By-laws of the Association. These officers shall serve for one year, or until their successors are elected and installed in office.

Article VIII.—Executive Council.

The Executive Council shall be the business body of the Association. It shall consist of delegates elected by affiliated bodies; by the Army and Navy permanent Medical Services; by the Canadian Medical Association, as provided for in the By-laws; and three members of the Association elected by the Council at its first meeting. The President, Vice-Presidents, Secretary and

Treasurer of the Association shall be *ex-officio* members of the Council. It shall conduct its business in accordance with the By-laws of the Association and shall present a report at each annual meeting. The members shall remain in office, and conduct the affairs of the Association, for one year or until their successors are elected.

Article IX.—Advisory Council.

The past-presidents of the Association shall form an advisory council to consider such questions as may be submitted by the Association; they shall act as a Judicial Committee when requested. They may offer advice, or make protest at any time, to the Association. The Convener of this Committee shall be the retiring President.

Article X.—Funds.

Funds for the purposes of the Association shall be raised by an annual assessment upon each ordinary member; from the Association's publications; and in any other manner approved of by the Executive Council. All funds received are to be transferred to the Treasurer and by him deposited in some responsible banking institution. The Treasurer shall give a bond to the Executive Council for the safe-keeping of all funds in his possession.

The Association year shall be the calendar year.

Article XI.—Amendments.

This Constitution may be amended by the Executive Council, at any meeting, after due notice of the proposed amendment has been given to each member, by the Secretary, in writing, and adopted by a two-thirds vote of those present and voting; provided that it shall not become effective until sanctioned by the Association in general session, after notice has been given by publication in the Journal.

BY-LAWS

Chapter I.—Membership.

Sec. 1.—Any physician may be elected a member of the Canadian Medical Association by the Executive Council upon forwarding:

(*a*) a written application for membership on an approved form;

(*b*) a statement showing endorsement by his Provincial

Association; provided that where no such Association is organized, he may be elected a member after being nominated by two members of the Association in good standing;

(*c*) the payment of the annual subscription, and subscribing to the Constitution and By-Laws of the Association.

Sec. 2.—Honorary members, after nomination, shall be elected by the Executive Council and approved of by the Association in general session.

Sec. 3.—So long as a member conforms to the Constitution and By-laws, he shall retain his membership and have all the privileges and powers thereof, provided that any member whose subscription shall not have been paid on or before the 31st December of the current Association year, shall, without prejudice to his liability to the Association, be suspended from all privileges of membership, and at the end of the succeeding year, if the arrears be still unpaid, he shall, *ipso facto*, cease to be a member, provided also that any member whose name has been removed from his Provincial Medical Association for unprofessional conduct, shall, upon representation from such Association, have his name removed from this Association.

No member shall, except in case of his death, or expulsion, or of his ceasing to be a member under the previous provisions of this article, cease to be a member without having given previous notice, in writing, to the Secretary of the Association not less than one month before his next annual fee is due, of his intention in that behalf, and having paid all arrears of subscription due by him.

Sec. 4.—Any delinquent member having once failed to comply with the sections of this article, unless absent from the country, shall have his name erased from the Register of Members of the Canadian Medical Association, and shall not be restored to membership until all such dues, as may be determined by the Executive Council, have been paid, and satisfactory evidence produced that he retains his membership in an affiliated society or association, if admitted through such channel.

Sec. 5.—No member shall take part in the proceedings of the Association, nor in the proceedings of any of the sections thereof until he has properly registered his name and paid his annual dues for that and previous years.

Sec. 6. Medical practitioners residing outside of Canada, and other men of science of good standing, may attend the annual meeting by invitation of the President or the Executive Council, or at the discretion of either upon a letter of introduction from an absent member of the Association. They may, after proper intro-

duction, be allowed to participate in the discussions of a purely scientific nature.

Sec. 7.—Medical students may be admitted to either the general meetings or to the meetings of any of the sections thereof, but shall not be allowed to take part in any of the proceedings. They shall be vouched for by a member of the Association to either the President or the General Secretary.

Sec. 8.—Associations and Societies whose membership comprises laymen as well as members of the medical profession, and whose work pertains to national welfare, may, upon application, be admitted as Associated Societies, and shall appoint delegates to attend the meetings and report upon the work of their Association.

Chapter II.—Annual Meeting.

Sec. 1.—The place of meeting shall be decided upon by the Executive Council, and shall be announced as early as possible. The details of the meeting shall be in the hands of the Committee of Arrangements under the direction of the General Secretary of the Association.

Sec. 2.—The meetings shall be held in general session and in such sections as may be determined upon by the Executive Committee.

Sec. 3.—The President shall preside at all general meetings. In his absence, or upon his request, one of the Vice-Presidents shall preside.

Sec. 4.—The order of business for all meetings shall be:

(*a*) Calling the meeting to order by the President.
(*b*) Addresses of welcome and response.
(*c*) The report of the Committee of Arrangements.
(*d*) Reading of minutes of last session.
(*e*) Reception of reports.
(*f*) Election of Association members to the Executive Council.
(*g*) General business.

Sec. 5.—The Rules of Order which govern the proceedings of the House of Commons of Canada shall be the guide for conducting all meetings of the Association.

Sec. 6.—All addresses delivered at any annual meeting shall immediately become the property of the Association, to be published or not, in whole or in part, as deemed advisable, in the official journal of the Association. Any other arrangement for

their publication must have the consent of the author or of the reader of same and of the Executive Council.

Chapter III.—Meetings of Sections.

Sec. 1.—The sections to be held at any annual meeting shall be determined by the Executive Council. In default of their so doing, this duty shall be discharged by the Committee of Arrangements.

Sec. 2.—Each section shall hold its meeting at such time and place as the Committee of Arrangements shall decide.

Sec. 3.—Each section shall elect a Chairman and a Secretary for the following year, at its last session during the annual meeting, and they shall assume office at once.

Sec. 4.—The Chairman shall preside at all meetings of the section, and with the aid of the Secretary, shall arrange for the papers and other business of the section.

Sec. 5.—The Secretary shall keep a correct account of the transactions and record them in a special section minute-book provided by the General Secretary. The Chairman must verify and sign the minutes which must be returned to the General Secretary at the close of the meeting.

Sec. 6.—All papers, essays, photographs, diagrams, etc., presented in any section, shall become the property of the Association, to be published in the official journal of the Association or not, as determined by the Executive Committee, and they shall not be otherwise published except with the consent of the author and of the Executive Committee.

Each author of a paper read before any section shall, as soon as it has been read, hand it with any accompanying diagrams, photographs, etc., to the Secretary of the section before which it has been presented, who shall endorse thereon the fact that it has been read in that section, and shall then hand it to the General Secretary.

Chapter IV.—Officers.

Sec. 1.—The general officers of the Association shall be a President; a Vice-President for each Province of the Dominion of Canada, who shall be the Presidents of the Provincial Associations; a General Secretary; and a Treasurer. The offices of Secretary and Treasurer may be combined.

Sec. 2.—Any five members of the Association may hand to the General Secretary, in writing, the name of a member whom they may wish to nominate for any office.

Sec. 3.—All general officers of the Association, except the President, shall be appointed by the Executive Council. The President, after nomination by the Executive Council, shall be elected by the Association in general session.

Sec. 4.—The President-elect shall be installed in office by the retiring President, at the close of the last general session of the annual meeting at which he is elected.

Sec. 5.—The President shall preside at the general sessions of the Association and at meetings of the Executive Council, and shall perform such duties as custom and parliamentary usage require. He shall deliver the Presidential Address at either the first or second general session of the annual meeting held under his Presidency, as he may decide. He shall be *ex-officio* member of all committees. For the meeting over which he is to preside, the President shall appoint a Committee of Arrangements consisting of five or more members who shall reside in the place at which the Association is to hold its annual meeting. He shall also name the chairman of this committee, who shall be responsible for the performance of its duties.

Sec. 7.—The Vice-Presidents shall assist the President in the performance of his duties. The Vice-President of the Province in which the meeting is held shall be the first Vice-President of the Association.

Sec. 7.—The General Secretary shall also be the Secretary of the Executive Council of the Association. He shall give due notice of the time and place of all annual and special meetings, by publishing the same in the official journal of the Association, or, if necessary, by notice to each member. He shall keep the minutes of the General Sessions of the annual meetings of the Association, and the minutes of each meeting of the Executive Council, in separate books, and shall provide minute books for the secretaries of the different sections, which he shall see are properly attested by both chairmen and secretaries thereof. He shall notify the officers and members of committees of their appointment and of their duties in connection therewith. He shall conduct all correspondence of the Association and shall publish the official programme of each annual meeting. He shall preserve and index the archives, the public transactions, essays, papers, and addresses

of the Association, and shall perform such other duties as may be required of him by the President or Executive Council. The General Secretary shall be *ex-officio* a member of all committees. For his services the General Secretary shall receive a salary which shall be fixed by the Executive Council. All his legitimate travelling expenses to and from the annual meetings and other places ordered by the Executive Committee shall be paid for him out of the funds of the Association.

Sec. 8.—The Local Secretaries shall assist the General Secretary at the annual and special meetings, and shall perform the duties of Corresponding Secretaries for the respective provinces they are elected to represent; these duties shall be performed under the direction of the General Secretary.

Sec. 9.—The Treasurer shall receive and collect the annual fees, and demands of the Association, from the members. He shall be the custodian of all moneys, securities and deeds belonging to the Association, and shall only pay out moneys on an order drawn by the General Secretary and approved by the Executive Committee whose chairman shall also sign all such orders. The Treasurer shall give to the Executive Council a suitable bond for the faithful discharge of his duties, and shall receive for his services a salary to be fixed by the Executive Council.

Chapter V.—Executive Council.

Sec. 1.—At the first general session of each and every annual meeting of the Canadian Medical Association, fifteen members thereof, who shall be present at that annual meeting, and representing, as far as possible, the various Provinces, shall be elected by ballot, after nomination, to act on the Executive Council for one year; provided that any one already elected a delegate by an affiliated society or association shall not be at that meeting elected a member of the Executive Council. The President of the Association shall name three tellers to conduct this ballot. No one shall serve as a member of the Executive Council who has not been a member of the Canadian Medical Association for at least two years.

Sec. 2. The Army and Navy permanent Medical Services and each affiliated Branch, Society, or Association, shall be entitled to elect, in addition to its President, who becomes an *ex-officio* member, one delegate to serve on the Executive Council for its membership in the Canadian Medical Association of from fifteen to fifty; two delegates for its membership from fifty-one to one

hundred and fifty; three delegates for its membership from one hundred and fifty-one to three hundred; and thereafter one delegate for every three hundred of a membership above three hundred; provided that no one delegate shall represent more than one affiliated society or association to which he may belong. Every delegate from an affiliated society or association shall be required, before acting on the Executive Council, to have entered his name on the annual register of the Canadian Medical Association, paid his annual subscription to the Association, and deposited a certificate with the General Secretary of the Association, duly signed by the President and Secretary of the affiliated society or association, from which he has been elected a delegate.

Sec. 3.—At its first meeting, the Executive Council shall elect three members in addition to those already elected by the Association.

Sec. 4.—The meetings of the Executive Council shall be held daily during the annual meeting of the Association; and at such other special time and place as the President may think necessary during the intervals between the annual meetings. For all specified meetings due notice shall be sent to each member specifying the objects of the meeting.

Sec. 5.—The Executive Council shall have charge of all properties and of all financial affairs of the Association. It shall, through its officers, conduct all the business and correspondence, and shall be responsible to the Association for the proper performance of its duties. It shall keep a record of the transactions of all its meetings and of the receipt and expenditure of all funds, and shall report upon the same to the Association at its first general session, which report shall be published in the Journal after the annual meeting. In the case of a vacancy in any office, on account of death or otherwise, during the interval between the annual meetings of the Association, it shall have the power to elect successors. Before the close of the annual meeting it shall nominate a President and place of meeting for the next annual meeting, and present a list of all standing and special committees and the members thereof. It shall preserve all addresses, papers and reports that have been delivered before the Association, and shall have power to publish or omit any address, paper or report, or part thereof, as it may think proper, in accordance with the wishes of the author.

Sec. 6.—In order that the business of the Executive Council may be facilitated during the interval between the annual meetings of the Association, the Executive Council may appoint a committee

of seven, from among its members, which shall be known as the Executive Committee. In all the business affairs of the Association it shall represent the Executive Council and to it, under the direction of the President, shall be delegated all the rights and powers of the Council. The President shall be a member of the committee *ex-officio* and shall select its chairman. The General Secretary shall be Secretary. The Executive Committee shall report to all meetings of the Executive Council and at such other times as the President may request. The President, or five members of the Executive Council, may call a special meeting at any time at which the Executive Committee may be annulled or changed.

Chapter VI.—Committees.

Sec. 1.—The Committees shall be (*a*) Standing and (*b*) Special.

Sec. 2.—Standing Committees shall be appointed by the Executive Council, which will also select their chairman. They shall be as follows:

1. A Committee of Arrangements.
2. A Committee on Necrology.
3. A Committee on Medical Legislation.
4. A Committee on Medical Education.
5. A Committee on Amendments to the Constitution and By-laws.

Sec. 3.—Special Committees may, from time to time, be appointed by the Executive Council or by the Association in general session. They shall select their own chairman and shall perform the duties for which they are called into existence.

Sec. 4.—All committees shall report in writing to the Executive Council prior to the annual meeting of the Association. They shall not expend any moneys nor incur any indebtedness without the sanction of the Executive Council.

Sec. 5.—The Committee of Arrangements shall arrange for the transportation of members to the annual meeting and for their accommodation at the meetings. They shall provide halls for all the meetings; arrange all details and facilities for the proper conduct of the meetings; and, under the direction of the President and General Secretary, arrange for all addresses and business of the General Sessions of the Association.

Sec. 6.—To the Committee on Necrology shall be assigned the duty of collecting, as far as possible, the obituaries of members dying since the last annual meeting.

Sec. 7.—To the Committee on Legislation shall be referred all matters pertaining to Provincial and Federal Medical Acts. It shall report on all legislation relating to medical affairs in the various governments, and upon all like matters proposed by medical councils.

Sec. 8.—To the Committee on Medical Education shall be referred all matters pertaining to medical colleges and medical education. It shall report upon the condition of medical education throughout Canada and upon any proposed change, and suggest methods for the improvement of medical education.

Sec. 9.—To the Committee on Amendments to the Constitution and By-laws shall be referred all matters relating to the subject, before action thereon by the Executive Council.

Chapter VII.—Elections.

All elections shall be by ballot, after nomination, and a majority of the votes cast shall be necessary to elect a candidate. Should there be more than two nominees for any position, the one having the lowest number of votes shall be dropped and a new ballot proceeded with. This procedure shall be continued until one of the nominees receives a majority of all votes cast, when he shall be declared elected.

All resolutions shall be carried by an open vote unless a ballot is requested.

Chapter VIII.—Amendments.

At any meeting of the Association in general session, the Executive Council may be requested to make any addition or amendment to the By-laws as may appear to be desirable. Such addition or amendment not to become effective until considered and passed by the Executive Council, after due notice has been sent in writing to each member of the Council.

Any alteration in the By-laws originating in the Executive Council, and adopted by that body, shall not become effective until sanctioned by the Association in general session, due notice of the proposed change being published in the Journal.

Editorial

THE ANNUAL MEETING OF THE ASSOCIATION

IT is very important that every member of the Association should make a special effort to be present at the Quebec meeting June 25th to 27th. This is the first opportunity the profession has had of coming together since the war, as the result of which many problems requiring discussion have arisen.

It is necessary to absorb into the ranks of active practitioners an enormous number of physicians who have been absent for varying periods. Although the major portion of this work must fall on the provincial and county societies, yet much good may be accomplished by this Association taking a leading part in the discussion of the question as to how these physicians may be reinstated in their practices.

The long distances between the different centres in Canada have produced a provincialism that should not exist in a field such as medicine. As physicians, we have a bond of union that should eradicate such narrow ideas far more than it does. It was hoped that the Canadian war-effort would have developed the national idea more than can be seen at the present time. A large attendance at meetings such as ours will always assist in keeping us out of this groove of provincialism, which has always impeded our progress as an Association. It is desired in no way to minimize the usefulness of the provincial and county societies. Only by their strength can we have a solid foundation for the Canadian Association. Where they are weak and neglected, the Association gets little support, and the profession in these parts correspondingly suffers.

Most of the provinces have recently been engaged in attempting to solve problems intimately connected with the

medical profession. The Federal Government is at present engaged in forming a Department of Health. It is safe to say that in no instance has the profession been able to exert the influence it should, in shaping this legislation along the lines of greatest benefit to the public, as well as to themselves. This would not have been the case if the Medical Societies had had a united and enthusiastic profession behind them.

To make an annual meeting a success we must have a large number present from every province. To those of the older members, who are financially able to make the trip, a special appeal is made. You who have prospered during recent years should let nothing interfere with your coming.

Our appeal for papers has been fairly well met, but there is yet room for further contributions to the programme. Those of our members who have not yet sent in their contributions, and who may desire to do so, are requested to forward them to the Secretary immediately.

POST-GRADUATE COURSES FOR MEDICAL OFFICERS

TO all graduates in medicine who served as medical officers in the war just finished, the necessity of some form of post-graduate training is evident. Many of them had no civilian practice before enlisting; none of them, since enlisting, have had an opportunity of doing anything but military work, and even that has often been of a purely executive character, and far removed from either the practice of medicine or surgery. Others again went overseas as undergraduates, came back to finish a hurried course, and returned again to the war, without much hospital training. Every one has had ample opportunity to forget all he ever knew of diseases of women and children.

It is therefore being recognized by some of the teaching centres that their part in post bellum reconstruction work should be to offer "refresher" courses to the members of

the Army Medical Service, who have so nobly played their part in the great conflict—courses which would fit these officers to begin, or to resume, their duties as civil practitioners, and in some instances, aid them to pass the licensing boards.

Such courses have been established by the teaching bodies in the London and Edinburgh Schools and became operative on April 15th of this year.

The medical faculties of McGill and Toronto Universities, realizing the great advantages both to the returning medical officers and to the public, have resolved to make this summer's post-graduate course especially adapted to meet the needs of these officers. These courses will begin about the middle of June and are planned to extend over a period of three months. It is understood that only a nominal fee, to cover the cost of material, will be charged. The services of the teachers will be entirely gratuitous.

These universities are to be congratulated on their foresight in attempting to supply these needed courses, and it is to be hoped that the officers will take advantage of this opportunity to re-establish themselves into civil life again. The time-tables have been carefully worked up with the assistance of returned men, so that essentially practical courses are assured. These are designed to appeal to those who wish to take up some special line of work as well as to the men who intend to take up general practice.

It is to be hoped that some really serious attempt will be made to give adequate instruction in treatment. This has always been the weak point in the teaching of our universities as well as in the vast majority of text-books. The outdoor departments should be used for these courses far more than the wards, especially for teaching men who are going into general practice. The ailments they will see here are the ones they must build up their reputations on. These medical officers have had considerable experience in examination of fit as well as unfit men, but many have little idea of how the ailments seen in the outdoor departments should be treated.

The Association

ANNUAL MEETING, QUEBEC, JUNE 25TH TO 27TH

Preliminary Programme

Address in Medicine:—W. S. Thayer, M.D., Professor of Medicine, Johns Hopkins Hospital, Baltimore.

Address in Surgery—Jasper Halpenny, M.D., Associate Professor of Clinical Surgery, University of Manitoba.

Addresses in Public Health—J. W. S. McCullough, M.D., D.P.H., Chief Officer of Health, Province of Ontario; and J. D. Pagé, M.D., Medical Superintendent, Quebec Immigration Hospital.

Section of Medicine

A. D. Blackader, Montreal—"Acidosis and actomonia."

D. A. Craig, London—"Physical examination of the chest."

G. G. Campbell, Montreal—"Lantern demonstration of skin diseases."

H. B. Anderson, R. W. Mann and H. M. Tovell, Toronto—"Interrelationship of mouth infection, neurasthenia and exophthalmic goitre."

H. A. Farris, St. John, N.B.—"The tuberculous hospital and dispensary."

W. F. Hamilton, Montreal.—"Pneumothorax in influenza epidemic."

J. C. Meakins, Montreal—"Chlorine gas poisoning—late results."

A. H. Gordon, Montreal—"Internal hydrocephalus and the Nonne-Froin syndrome."

F. G. Finley, Montreal—"Influenza and Sepsis."

H. B. Cushing, Montreal—"The importance of secondary infections in the contagious diseases."

E. C. Levine, Montreal—"Indications and results of blood transfusion."

James Third, Kingston—"Danger signals in cardio-vascular affections."

Fletcher McPhedran, Toronto—To be announced.

Lionel M. Lindsay, Montreal—"Infantile tetany-spasmophilia."

Section of Surgery

A. Primrose, Toronto—"Tumours of the kidney."

G. E. Armstrong, Montreal—"Focal infections; ileal and colonic stasis."

C. L. Garner, Fernie, B.C.—"Cystoscopy."

A. E. Garrow, Montreal—"Report with remarks on a case of sub-total gastrectomy for diffuse carcinomatous infiltration (malignant 'leather bottle' stomach)."

C. B. Keenan, Montreal—"Secondary extra-dural hæmorrhage of the cord."

E. M. Eberts, Montreal—"Fœtal adenomata in the thyroid and their relation to hyperthyroidism."

W. G. Turner, Montreal—To be announced.

R. C. Powell, Montreal—"Diagnosis of surgical diseases of the kidney."

Fraser B. Gurd, Montreal—"The surgical treatment of chronic chest sinuses."

N. J. Maclean, Winnipeg—To be announced.

Herbert Bruce, Toronto—"Efficiency in an army medical service."

Section of Public Health

T. H. Whitelaw, Edmonton—"The practical aspects of quarantine for influenza."

M. M. Seymour, Regina—"The Saskatchewan Union Hospital."

C. M. Hincks, Toronto—"Mental hygiene and the medical practitioner."

W. F. Roberts, St. John, N.B.—"A provincial ministry of health."

G. S. Mundie, Montreal—"The problem of the mental defective in the Province of Quebec."

Helen MacMurchy, Toronto—"Child welfare."

Eugene Grenier, Montreal—"La lutte anti-tuberculeuse est une lutte sociale: le role des gouvernements; le role des initiatives privées pour le pays."

J. A. Beaudouin, Lachine—"Epidemiology."

J. E. Laberge, Montreal—"Town planning and civic authorities."

J. D. Pagé, Quebec—"Hygiene publique et conscience publique."

P. H. Bryce, Ottawa—"The scope of a Federal Department of Health."

H. Montizambert, Ottawa—To be announced.

Gordon Bates, Toronto—"Some aspects of the social hygiene problem in Canada."

Section of Eye, Ear, Nose and Throat

L. deV. Chipman, St. John, N.B.—"Nasal affections in relation to general medicine."

G. Sterling Ryerson, Toronto—"On ocular imbalance."

S. Hanford McKee, Montreal—"The enlargement of the conjunctival sac by the use of dental compound."

G. H. Mathewson, Montreal—To be announced.

W. G. M. Byers and F. T. Tooke, Montreal—"The surgical treatment of immature senile cataract."

H. D. Hamilton, Montreal—"Benign growths of the larynx in children."

R. Craig, Montreal—To be announced.

E. Hamilton White, Montreal—To be announced.

Section of Obstetrics and Gynæcology

Papers to be announced.

The following names of contributors to the programme have been received too late for insertion in their proper Section:

Medicine: Drs. Fortier, Leclerc, Lessard, Rousseau, Vallée, Guérard and Jobin.

Surgery: Drs. Simard, Dagneau, Ahern, Lemieux, Pineault and Dubé.

Public Health: Drs. Cuillard, Savard, DeVarennes, Savary, Palardy, Lafrenieres, Beaudry and E. Pelletier.

HOTELS

The following are the rates quoted us by the hotels at Quebec:

Chateau Frontenac:

	With bath	Without bath
Single room	$3.00 to $5.00	$2.00 to $3.00
Double room	5.00 " 8.00	3.50 " 5.00
Suites (2 people)	6.00 " 8.00	
Suites (4 people)	9.00 " 12.00	

No reduction is made in the rates of $3.00 and $2.00 quoted for single rooms, the former with, and the latter without bath. From all other rates quoted, a reduction of fifty cents will be allowed to members of the Association attending the convention.

Victoria (Palace Hill)—American plan, $3.00, $3.50 and $4.00.

Clarendon (corner St. Anne and Gordon Street)—American plan, $3.00 and $3.50.

Ste. Ursule House (corner St. Louis and Haldimand Streets)—American plan, $3.50 and $4.00.

As announced previously, there will be no special railway rates this year.

We are informed by President Grondin that the privileges of the Quebec Golf Club have been extended to the members of the Association during the period of the meeting.

Obituary

AN APPRECIATION OF THE LATE DR. RICHARD A. REEVE

ALTHOUGH our obituary columns in the March number contain a reference to the late Dr. R. A. Reeve, we feel that the loss of this prominent figure in medical circles deserves more than passing notice. Following the appearance of the March number we received from one of his old friends the following note of appreciation, which we are glad to publish.

Dr. Reeve, one of the best known characters in the ranks of Medicine in Canada, died in Toronto on January 7th. His name was a household word, and all classes regarded him as one of the most delightful personalities Canada has ever had in the medical profession.

He was born in Toronto in 1842; was educated in Victoria College, Cobourg, and graduated in Arts from the University of Toronto in 1862. He afterwards took up Medicine in Queen's College, Kingston, and was elected a Fellow of the Royal College of Physicians and Surgeons. In 1872 he became a lecturer on Diseases of the Eye and Ear in the Toronto School of Medicine, and was elected Dean of the Faculty of Medicine in 1896. This position he occupied until 1908 when he resigned.

As a university man he was simply indefatigable in his endeavours to serve his Alma Mater, and was a leading spirit in many movements. He was one of the few Canadians selected to fill the honoured position of President of the British Medical Association when it met in Toronto in 1906. His appearance carried at once to any observer the impression of gentleness, amiability, and manliness, and to know him was to love him. His ethical sense was of the finest kind possible, and his consideration for others was one of the most pleasing elements in his character. While it is true that few men in the hurly burly of life escape criticism by enemies, which seem to be a necessary part of any man's experience, yet in the case of Dr. Reeve it may truly be said that while he stood out in a most determined way for his ideals he did

it with so much tact that all men recognized his honesty of purpose, and could not help respecting his palpably religious fervour.

Dr. Reeve's death is a distinct loss to the medical profession, and his tragic end will long be regretted by all who knew him.

Convocation Hall at the University of Toronto, which was erected largely as a result of his enthusiasm, will always stand as a monument to his memory.

As a skilled physician Dr. Reeve had very few equals on the continent of America, and his opinions were respected in the United States as much as they were in Canada.

DR. WALLACE CLARKE

Dr. Wallace Clarke, gold medalist in Arts, and graduate in Medicine of McGill University in 1871, died at his residence in Utica, March 17th, after an illness of about two weeks. Dr. Clarke made a high reputation for himself in his city and in his state. He was health officer of the city of Utica for many years. He was one of the first to use formaldehyde as a disinfectant in place of the old hot air system previously in use. He was also one of the first to direct attention to the house fly as a common carrier of disease. Although he had a large practice, he found time to enjoy the social side of life, and took a great interest and keen delight in all outdoor sports.

Besides his widow he leaves one son, Dr. T. Wood Clarke of Utica, who enjoys a high professional reputation; and a sister living at present in Montreal.

DR. WILLIAM BURT

Dr. William Burt died at his home in Paris, Ontario, on March 14th, in his seventieth year. He was born in South Dumfries, and, after graduating from the Toronto School of Medicine, he took a post-graduate course in Brooklyn Hospital. Later he joined the United States army as a surgeon and saw active service on the Texas frontier. He returned to Canada and took up practice in Paris, where he has remained for the last forty-seven years. He was highly esteemed in the medical profession, a member of the Toronto senate and a former president of the Ontario Medical Association. After his return to Paris he always indentified himself with public affairs, having been chairman of the Board of Education, and for some years president of the Children's Aid Society. In his passing all classes keenly feel the loss of a true friend.

DR. A. POUSSETTE

Dr. A. Poussette, one of Sarnia's most prominent physicians, died on March 6th, at the advanced age of eighty-four. He graduated at McGill University in 1860 and went to practise in Corunna in the same year. On the death of his brother-in-law, Sir Arthur Buck, in Sarnia, he moved to that place to take up his brother-in-law's practice, in the year 1864. In 1895 he was appointed medical superintendent of the House of Refuge. In 1896 he was elected mayor of the city, and in 1905 he was appointed medical health officer. He was also a prominent Oddfellow. A loyal citizen and civic worker, he gave a helping hand to every work of progress in the community where he so long resided, and many who attended his funeral recalled the things accomplished by the deceased in his time of greatest activity.

DR. W. B. KENNEDY

The recent death of Dr. W. B. Kennedy came as a great shock to the community. He had been a well-known practitioner in Guelph for the last thirty-five years. Though not in robust health, few of his friends realized that his condition was serious. He passed away suddenly on the evening of March 17th. Dr. Kennedy graduated in medicine at Queen's University and following graduation became house surgeon in Kingston Hospital. Subsequently he practised his profession in Brainard, Minnesota, for a short time and then settled in Guelph, where he spent the remainder of his life. He was a man of kindly spirit, a friend to many who needed a helping hand. He took an interest in all matters pertaining to the welfare of the community and for some time served in the city council. Those who knew him intimately had a very high regard for his gifts of mind and sterling character, and a wide circle of friends will miss his genial presence.

Dr. A. Wallace Mason died at Pomona, California, on March 20th. He came to Toronto in the early sixties and for many years carried on a practice in that city, but was unable to continue owing to ill health. He is survived by his wife, four sons and three daughters.

Dr. Edward McGrath, a well-known practising physician of Peterboro, passed away recently, after a short illness, from heart

failure. He died at St. Joseph's Hospital, an institution in which he had always taken a keen interest and of which he was superintendent for a number of years. Dr. McGrath came to Peterboro about thirty years ago and was associated with the late Dr. O'Sullivan, subsequently acquiring his practice which he carried on up to the period of his death. His ability as surgeon and physician was recognized by the members of the profession. He was a big hearted, kindly man, who did an immense amount of good in the community in which he resided.

Dr. C. J. McBride died at Welland, on March 2nd. He was on his way to Florida, when taken suddenly ill, so immediately returned. He was born thirty-five years ago at Cookstown, graduated from the University of Toronto, and came to Welland seven years ago; since that time he built up a large practice in the county. He had been Coroner for a number of years.

Dr. George Stanton, who for forty-one years practised medicine in Simcoe, died on March 17th, at Denver, after a brief illness. He was a graduate of McGill University.

Dr. John Walker died at Glencoe on March 23rd, after a serious illness of three months' duration. He was a prominent physician of the town and its medical health officer. He was connected with the various institutions of the community for over a quarter of a century.

Dr. George Etienne Cartier died recently at his home in Montreal at the age of forty-six. He graduated at Laval University and before entering upon practice of medicine was an interne at the Hôtel Dieu for two years. He leaves a wife and five children. Dr. Cartier had completed the twenty-third year of his practice at the time of his death.

The death occurred, on March 22nd, of Dr. A. A. Le Blanc, of Arichat, Nova Scotia. Arichat loses one of her foremost and most progressive citizens for, on the invitation of its residents, Dr. Le Blanc went there thirty-years ago and continued in practice ever since.

Dr. Stewart MacKenzie, of Toronto, died at Bellevue Hospital recently, the result of a serious accident. The doctor

had just received his discharge from the Canadian army having been wounded and gassed in France.

Dr. Andrew Bourque, of Bourget, Ontario, died on March 17th. He was forty-five years of age. He practised for the last eighteen years at Bourget. He possessed many sterling qualities and his death has caused great regret.

The following list of names announce the members of the profession who died recently of Spanish influenza and pneumonia: Dr. Lloyd A. Jones, Hamilton; Dr. E. J. Kibbe, London, Ontario; Dr. George H. Berry, Westport; Dr. Walter McInnes, Vittoria.

Miscellany

News

MARITIME PROVINCES

The Faculty of Medicine of Dalhousie University is fortunate in having had presented to it by the Halifax Disaster Relief Commission, a large set of radiograms of injuries sustained by the victims of the great explosion.

These stereoscopic radiograms, which number over three thousand, were very skilfully taken by an expert technician, a Mr. Hollingham, but at the time of the disaster by the Naval Hospital to the medical relief department of the Relief Commission.

They form a valuable series of skiagraphic illustrations of injuries of all kinds.

They are to be stored for the present in the medical building, Carleton Street, and to be used for teaching purposes by the professors and lecturers in surgery.

The list of successful candidates in the pharmaceutical examinations recently held in St. John, New Brunswick, has been given out by the registrar, J. B. Mahoney. Six passed in general

subjects; one in materia medica; two in chemistry; four in pharmacy: three in dispensing; three passed in all subjects. The examiners were: in general subjects, Dr. H. S. Bridges; materia medica, E. R. W. Ingraham; chemistry, M. V. Paddock; pharmacy, N. B. Smith; dispensing, A. D. Johnston.

Dr. F. I. White has been appointed local medical representative in Moncton by the Department of Soldiers' Civil Re-establishment and Invalided Soldiers' Commission. The Great War Veterans' Association, and other ex-soldiers in Moncton, have been advised that in future the intention is, as far as possible, to have all their cases treated in that city.

Mr. W. B. Fawcett has made a generous offer to subscribe $10,000 towards the building and maintaining of a public hospital in Sackville in memory of the soldiers of Eastern Westmorland. Five thousand of this amount is payable to the Building Committee, and the balance, payable in five annual instalments, is for its support when in active operation. Mr. Fawcett urges co-operation in the scheme, and believes a considerable number of precious lives would have been saved in the recent epidemic, if a hospital of equal merit with those of Moncton and Amherst could have operated in or near Sackville. This would have been within a thirty or sixty minute ride of Cape Tormentine, or the remotest point anywhere of the three large parishes of Botsford, Westmorland and Sackville, as well as portions of Dorchester and Shediac.

Dr. Philip Nase has been appointed to the staff of the Pensions Board as ear, nose and throat specialist for the province of New Brunswick.

QUEBEC

The ravages which have been caused by tuberculosis in the province of Quebec during the past ten years were referred to by the Hon. Walter Mitchell, provincial treasurer, in moving the adoption of resolutions confirming the contract between the Provincial and Federal Government for the extension of the Ste. Agathe Sanitarium, which will be used for the next five years mainly for soldiers returning from service overseas with tubercular trouble, and afterwards entirely as a civilian sanitarium, maintained by

the province. Mr. Mitchell stated that the government fully realized that something must be done to put a check on the plague that was destroying over 3,000 victims annually. The Sanatarium at Ste. Agathe was established in 1911 and had treated seven hundred and ninety-five patients since then, having a capacity now of seventy beds, spending $228,739 which had been voluntarily subscribed for its work. The governments jointly intend to extend the institution to two hundred and seventy-one beds, of which at least twenty will be for civilians, and a larger number, if the beds are not required for soldiers. The report dealing with statistics points out that the deaths were double the number of those who died from typhoid, measles, scarlet fever and diphtheria put together.

All the Laval candidates for license to the practice of medicine, in this province, eighteen in number, successfully passed their final examinations. The majority of the graduates will practise in the municipalities surrounding Quebec. The new medical men have been handed their diplomas a few months before the usual time, on account of the special regulations adopted to furnish medical men more rapidly for the army. A special summer session of three extra months was held to make up the necessary time. It is understood that the old system of three terms a year will be resumed and that there will be no summer session next year.

Dr. J. A. Beaudry, inspector-general of the Superior Board of Health of the province, reports a considerable amount of influenza still prevalent, particularly in the country districts of the counties of Rimouski and Verchères; in the affected districts special regulations are still being observed. Dr. Beaudry also states that there is a small amount of smallpox, and that about forty rural municipalities are affected. The type is not virulent; vaccination is being widely performed by the provincial health officers.

Notice has been given by Hon. J. Decarie, that he will introduce this week a bill amending the Public Health Act. The bill is not yet distributed, but it is understood to make provision for preventive and curative action for venereal disease.

The twenty-first annual meeting of the local association for Greater Montreal of the Victorian Order of Nurses for Canada, was held recently. The Order has twice faced the supreme test,

when they were called upon for emergency work at the time of the Halifax disaster and during the influenza epidemic. During the latter the Montreal staff of twelve nurses had paid 3,500 visits to over 5,500 sufferers. The average number of visits for a nurse in the city during the year was 2,588. The Order contributed in no small measure to the baby welfare work of the community. In addition to maternity work the nurses gave instruction in 1,100 prenatal cases, paying in all 8,068 visits to mothers and their babies.

Dr. J. N. Roy, oculist and aurist of the Hôtel Dieu of Montreal, has received the distinction of Laureate of the Academy of Medicine of France.

ONTARIO

A Federal Health Act is under consideration at Ottawa. The control of immigration by selection, the establishment of institutions for the feeble-minded, and all problems affecting the social welfare of the country will be the subjects claiming new legislation. Another probable development will result in sending representatives from Canada to Europe in connection with the medical examination of immigrants before embarkation. Dr. Clarke and Dr. Hincks, of Toronto, are likely to go to Europe late in the summer for this purpose.

A comprehensive programme has been mapped out for the members of the Ottawa Health Society by the executive; fifteen standing committees have been appointed and they will deal with all manner of problems including: Hospital co-operation in providing clinics and dispendaries for the feeble-minded, social, and other diseases; home nursing, home helps, medical relief and maternity; child welfare centres and milk stations, sick nursing, health insurance, inspection of school children; physical training of pupils and open schools for pre-tubercular children; a tuberculosis committee to co-operate with the Anti-Tuberculosis Association and May Court Club. All these activities but briefly indicate the work in prospective of the Ottawa Health Society.

The Essex Border Utilities Commission has expressed itself in favour of a unification of the health boards of the five border municipalities of Ford, Walkerville, Windsor, Sandwich, and Ojibway and after considerable discussion decided to ask Dr. J. W. S. McCullough, of Toronto, as chief medical officer, for suggestions

looking towards a joint system of health inspection. Dr. McCullough's reply will be presented to the Essex Medical Society for further consideration. It was suggested during the conference that such an arrangement between the municipalities in the recent epidemic might have done much to reduce the total number of cases.

THE extent of the menace of venereal disease in Ontario has been rather strikingly proven by the monthly returns to the Provincial Health authorities. During December medical health officers reported one hundred and seventy-eight cases, a considerable increase over the preceding months, and January's cases show a further jump of two hundred and sixty-four cases, the increase being most noticeable in regard to syphilis. A most depressing fact in connection with the month's returns is that syphilis caused seven deaths, four of the victims being babies under a year old who died of hereditary syphilis. The influenza epidemic, though it has lost its force, is still taking a greater toll of valuable lives than all other communicable disease together. Since the beginning of October there have been 8,795 deaths in the Province from influenza. The disease at present does not seem to be afflicting any particular part of the province, practically every municipality reports cases.

THE Department of Civil Re-establishment has decided to utilize the Westminster Soldiers' Convalescent Hospital, at London, exclusively for mental cases. It will accommodate three hundred and fifty patients. Patient nows located at the Newmarket mental hospital will be transferred to London. Neurological and shell shock cases will be treated, as formerly, in general hospitals. A new sanitarium for tubercular patients is to be built at Woodbridge at a cost of $320,000.

PREMIER HEARST has announced that the Ontario Government will issue a grant of $119,650 for erection of buildings for the Orillia Hospital for the feeble-minded. Besides the completion of other plans this amount includes a building for patients suffering from tuberculosis and other contagious diseases. $50,000 have been appropriated by the government for improvements to the Ontario School for the Deaf. A grant of $150,000 towards the building of a new medical school in connection with Western University, London, has been requested of the Ontario Government by a special deputation.

The medical staff of the Kingston General Hospital has been reorganized, and is now under the direction of Queen's University. The hospital is to be enlarged with $100,000 given by the late Dr. James Douglas, Chancellor of Queen's, as a nucleus, and the Ontario Government, the city of Kingston and the municipalities of the district are to be asked to co-operate. The graduating class this year is the largest in the history of Queen's medical school. A number of the graduates of this last war session are medical students who served overseas in various capacities, but principally with the Queen's Hospital Corps in Egypt and France. The list of successful candidates numbers sixty-three. To L. H. Appleby, Clarendon, has been awarded the Medal of Medicine; with honour of the Medal in Surgery; and to L. S. Fallis, Millbrook, the Medal in Surgery.

The formal opening of the New Dominion Orthopædic Hospital took place recently in Toronto. The Minister of Militia officially opened the institution. In reviewing the work of the Army Medical Corps, General Mewburn said that about 700,000 cases had been handled in hospitals overseas and in Canada, which figures were advanced to testify to the sacrifices of the medical profession during the war. He pointed out that at the time of the signing of the armistice the government was fairly able to estimate the bed accommodation in Canada, and he thought that there was now ample hospital services in Canada to take care of returning soldiers.

The new military Orthopædic Hospital is still unfinished, but of the total accommodation of 1,000 beds, already 629 are occupied. The staff of the hospital includes about one hundred and twenty-five, of whom twelve are doctors, twenty-one nurses and eight V.A.D.'s.

On the opening of the Connaught Laboratories, in 1917, the government made a grant of $75,000 for endowment of the laboratories, and to this amount $25,000 has been added, making a total of $100,000, the proceeds of which are to be devoted to investigation of problems in preventive medicine, and to endeavour to provide means whereby the incidence of and the mortality from communicable diseases may be lessened.

ARMY MEDICAL SERVICES

At an investiture at Buckingham Palace the Distinguished Service Order and Bar was awarded to Colonel Thomas Leask, C.A.M.C.

The King has presented the Red Cross, first-class, respectively to Matron Jean Urquhart and Matron Evelyn Wilson.

Dr. Alfred Massey, formerly of Belleville, Ontario, has won distinction in the Belgian Congo, where, as an appreciation for his services as medical officer over a battalion of native troops, he has been awarded the rank of Major, and has been decorated with the La Croix de Chevalier de Lordre Royal de Lion.

Nursing Sister Beatrice McDonald, of North Bedeque, Prince Edward Island, a reserve army nurse, was awarded a distinguished service cross "For conspicuous heroism under fire". The presentation was made on March 27th in the office of the Secretary of War, Washington, in the presence of many members of the general staff. Nurse McDonald, who was stationed at a British casualty hospital, stuck to her post during a night raid by the Germans, caring for the wounded until she was struck down by a fragment of a shell, losing the sight of one eye.

Dr. Lyon H. Appleby, who spent two years overseas in Egypt and France with Queen's Hospital, is the winner of the Dr. Hoffman research scholarship in surgery, and medal in medicine, with honour of medal in surgery, at Queen's College, January 31st, 1919.

Nursing Sister Ernestine Champagne, who succumbed recently to pulmonary tuberculosis, contracted the disease while working under canvas at St. Cloud Hospital, France, and was invalided home in 1917. She was the daughter of the late Justice Champagne, and had been decorated by the French Government for distinguished service in France.

Nursing Sister Grace Errol Bolton, of Montreal, died recently at the Second Military Hospital, Leeds, England.

An International Red Cross Conference is expected to be convened within the next three or four months, at which will be considered the extension of the powers and objects of Red Cross Societies under the Geneva Convention.

Major David Law, Assistant Commissioner of the Red Cross Society in France, has resigned his position owing to his having to return to Canada. Captain D. J. Murphy, who has been rendering valuable assistance to the work in France, has been temporarily appointed as Acting Assistant Commissioner for the short period in which it is expected that the need will continue.

During a period of nine months in 1918 the Paris Dépôt received 12,399 cases of Red Cross Supplies and distributed 12,825 among 1,694 hospitals. During eight of those same months, 15,590 cases of supplies were received at the Boulogne warehouse and 13,427 cases were distributed. In distributing the supplies from Boulogne the Red Cross motor lorries travelled 78,619 miles.

Appointments (Canada):—Lieutenant-Colonel Percy Keith Menzies is posted for duty under the A.D.M.S., military district No. 2.

Major Robert Frederick Flegg is appointed to a Permanent Conducting Staff, and attached to the Clearing Service Command.

Lieutenant-Colonel Archibald Lorne Campbell Gilday, D.S.O., is appointed as acting D.A.D.M.S., military district No. 4, vice Major H. S. Muckleston.

Captain Walter Lawson Muir is posted for duty under the A.D.M.S., military district No. 6.

Captain Gerald Shaw Williams is posted for duty under the A.D.M.S., military district No. 10.

Lieutenant-Colonel Ethelbert Browne Hardy, D.S.O., is posted for duty as Officer Commanding, St. Andrew's Military Hospital, vice Major T. D. Archibald.

Major Benjamin Leslie Guyatt is posted for duty as Officer Commanding Base Hospital, Toronto, vice Lieutenant-Colonel Ethelbert Browne Hardy, D.S.O.

Captain Louis Joseph Adolphe Mignault, is appointed to the staff of the A.D.M.S., Embarkation, military district No. 6.

Lieutenant Romeo Jules Vallee, returns to military district No. 4 from military district No. 6.

Captain William Goldie is posted for duty under the A.D.M.S., military district No. 2.

Major Harvey Lee Jackes is posted for duty under the A.D. M.S., military district No. 2.

Captain Harold St. Clair Wismer returns to military district No. 1 from military district No. 2.

Captain Charles Edmund Flatt is appointed to a Permanent Conducting Staff and attached to the Clearing Services Command.

Major Thomas Logan Towers is posted for duty under the A.D.M.S., military district No. 1.

Captain Charles Francis Dunfield is posted for duty under the A.D.M.S., military district No. 1.

Captain Arthur Martin is posted for duty under the A.D.M.S., military district No. 4.

Lieutenant Garnet George Stonehouse is appointed under the A.D.M.S., Embarkation, and attached to the Clearing Services Command.

Captain Roy Gordon Brain is posted for duty under the A.D.M.S., military district No. 1.

Captain Duncan Alexander Campbell is posted for duty under the A.D.M.S., military district No. 2.

Major Charles H. Robson is posted for duty under the A.D. M.S., military district No. 2.

Lieutenant-Colonel Daniel Paul Kappele, D.S.O., is posted for duty as Officer Commanding, Brant Military Hospital.

Colonel Frederick Samuel Lampson Ford, C.M.G., ceases to be employed as A.D.M.S., Embarkation, and resumes duty in the branch of the D.G.M.S., Militia Headquarters, Ottawa.

Major William Boyd McKechnie, is posted for duty at the Vancouver Military Hospital.

Promotions:—Captain Ernest Herbert Young to be Major while commanding the Military Hospital, Cobourg.

Captain Clarence B. Farrer, to be Major, 11th March, 1919.

The following Lieutenants to be Captains:—Lieutenant Roy Dickson Lindsay, 1st January, 1919; Lieutenant Daniel Alexander Carlyle, 1st December, 1918.

Returned from Overseas:—Captain A. E. Naylor, Captain D. A. Campbell, Captain D. Black, Captain E. H. Marcellus, Captain M. U. Valiquet, Major James Carlyle Fyshe, Major James Albert Dickson, Captain William Lewis Colquhoun MacBeth, Captain

Henry Stephen Gooderham, Major Robert Flegg, Colonel H. A. Bruce, Captain C. K. Wallace, Colonel W. H. Delaney, Captain F. B. Day, Lieutenant-Colonel J. S. Jenkins, Captain R. P. Borden, Major C. H. Robson, Major E. H. Mayhood, Major John Wesley Pilcher, Lieutenant-Colonel G. E. Kidd, Captain D. A. Warren, Major R. J. McEwen, Captain C. L. Douglas, Captain A. R. Alguire, Captain L. P. Churchill, Captain N. Monk, Captain W. Hale, Major F. W. Tidmarsh, Captain J. A. Reid, Major J. F. Irving, Major W. H. MacDonald, Major A. Beech, Captain H. A. W. Brown, Captain W. D. Cruikshank, Major K. E. Cooke, Captain C. E. Hanna, Captain R. F. Greer, Captain H. V. Malone, Major J. A. Briggs, Lieutenant-Colonel T. M. Leask, Captain R. M. Harnie, Captain (acting Major) G. E. McCarteney, Captain George Douglas Jeffs, Captain W. C. Givens, Major (acting Lieuten ant-Colonel) C. Hunter, Major W. G. Lyall, Captain J. Bilodeau, Captain C. O. Banting, Major G. W. Hall.

Book Reviews

PRINCIPLES OF BACTERIOLOGY. By ARTHUR A. EISENBERG, A.B., M.D., director of laboratories, St. Vincent's Charity Hospital. 198 pages, illustrated. Price, $1.75. Publishers: C. V. Mosby Company, 801 Metropolitan Building, St. Louis, 1918.

This little book is intended as an introduction to Bacteriology for such readers as hospital nurses and, one might add, third year medical students too. The definitions and classifications are particularly good, especially the classification of the varieties of immunity as given on page 58.

Technical terms are not avoided, but when used are fully explained. The Greek is, however, here and there open to some question as for instance when we are told on page 20 that "geneo" (for geunao) is "I produce"; or on page 59 that eryteos (for erytheos) is red. The latter may be a misprint.

Surely the account of Infantile paralysis on page 179 does not do justice to Flexner's work? In this account we have the expression "solution of this disease" when it is the problem of the

disease that is meant. One is glad to see historical data so freely given; but we hope that "1718" is a misprint for 1798, the date of the introduction of vaccination by Jenner. Jenner was not born in 1718. "Sir Wright" ought to be Sir Almroth E. Wright.

United States Army *X*-ray Manual. Authorized by the Surgeon-General of the Army. Prepared under the direction of the Division of Roentgenology. 506 pages, with 219 illustrations. Price, $4.00. Publishers: Paul B. Hoeber, 67 East 59th Street, New York, 1918.

This is not merely a handbook for the skiagraphist, it is an exhaustive treatise on the theory and practise of Roentgenology.

The illustrations are numerous and very clear. Every possible difficulty is dealt with in an authoritative but condensed manner. The introductory discussion on the physics of the *X*-rays is particularly good. The skiagraphy of no part of the work is omitted; and a section is devoted to the therapeutic use of the rays.

Mental Diseases. A Handbook Dealing with Diagnosis and Classification. By Walter Vose Gulick, M.D., assistant superintendent Western State Hospital, Fort Steilacoom, Washington. Illustrated, 142 pages. Price, $2.00. Publishers: C. V. Mosby Company, St. Louis; McAinsh & Co., Toronto, 1918.

This book is truly multum in parvo, a book of definitions and illustrations. If there was nothing in it except the illustrations, it was worthy to be published.

The author makes no attempt to give a text-book describing all the varieties of abnormal mentality; but he describes in a vivid and condensed style a sufficiently large number of the types more frequently met with to make his book an excellent supplement to the large and complete treatises on what used to be called "Insanity". If it had contained some description of the psychology of the diseased mind at different ages, its value would have been still further enhanced.

We object to the phrase "mental metabolism" on page 40 because "metabolism" means exchange of material and not merely any kind of change; probably cerebral metabolism is meant. A possible disappointment to some may be that there is practically nothing said about treatment.

Physical and Occupational Re-education of the Maimed. By Jean Camus, and others. Authorized translation by W. F. Castle, Surgeon, R.N. With articles on British Institutions by Sir Arthur Pearson, Bart., and others. 195 pages. Price, 5/- net. Publishers: Baillière, Tindall & Co., 8 Henrietta Street, London, 1918.

Just as in the great War, science was abused in order to take life, so as a result of the war is science being appealed to. to repair the ravages of shot and shell. This book might be called the romance of re-education. Few people are aware of the magnitude of this work of the re-education of men suffering from every form of sensory and motor disability in almost every country which was visited by the demon of Germanism. The mechanisms in place of limbs are not only ingenious but evidently practically efficient.

The Wassermann Test. By Charles F. Craig, A.M., M.D., Lieutenant-Colonel, Medical Corps, United States Army. Published with authority of the Surgeon-General, United States Army. 239 pages, illustrated. Price, $3.00. Publishers: C. V. Mosby Company, St. Louis; McAinsh & Co., Toronto, 1918.

This is an exhaustive monograph on a test of immense utility in which the subject is systematically dealt with in due historical order.

It is remarkable that, valuable as the test is, the biochemistry of it should be as yet only imperfectly known.

There is in the volume a great deal of matter of the utmost importance to those engaged in treating cases of syphilis at all stages of the disease, but the general practitioner will find much in the book that will help him.

Concerning Some Headaches and Eye Disorders of Nasal Origin. By Greenfield Sluder, M.D., clinical professor and director of the department of laryngology and rhinology, Washington University Medical School, St. Louis. 272 pages, 115 illustrations. Price, $7.00. Publishers: C. V. Mosby Company, St. Louis; McAinsh & Co., Ltd., Toronto, 1918.

This is an exhaustive monograph which cannot fail to be of value to the rhinologist. Its illustrations are numerous and admirably clear.

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THE DIFFERENTIATION OF EARLY TUBERCULOSIS AND HYPERTHYROIDISM BY MEANS OF THE ADRENALIN TEST

By Norman Clive Nicholson

and

Emil Goetsch

THE difficulties in the diagnosis of tuberculosis in its earliest stages are apparent to all workers in this field of medicine. Particularly is this true of that large group of patients in whom the familiar syndrome of fatigue, asthenia, loss of strength, loss of weight, nervousness in varying degrees, tachycardia, vasomotor instability and possibly slight elevation of temperature would make one suspicious of tuberculosis, but in whom the physical signs, laboratory and *x*-ray findings are insufficient for a positive diagnosis.

How frequently indeed one meets patients, who, under the suspicion of tuberculosis because of just such symptoms, have undergone a most rigid anti-tuberculosis therapy, extending in some instances over years. Not only have they followed the anti-tuberculosis therapy, they have indeed subjected themselves to every form of therapy calculated to benefit them, such as rest, extra-feeding, exercise, work, change of climate, possibly even surgical measures, but all to no avail,—their symptoms have remained unimproved.

An equally difficult problem is presented by another group of cases in which there is a tuberculous lesion definitely demon-

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(From the Trudeau Sanatorium, Trudeau, New York.)
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stratable by physical signs and *x*-ray, which, however, after a sufficient length of treatment may or may not show retrogression, and which is still accompanied by symptoms of rapid pulse, fatigue, and possibly slight temperature. Here it is questionable whether the symptoms can be attributed to the tuberculous lesion. Especially is this so, if after six months' rest cure the pulmonary condition shows improvement both from physical signs and *x*-ray findings.

Regarding both of these groups the question naturally arises: Are these symptoms referable to the tuberculous lesion; are they a residual syndrome of previously active tuberculosis, or are they due to an entirely different cause? It is our belief that in some of these cases the symptoms are due definitely to hyperthyroidism. Our problem then has been to discover the presence of hyperthyroidism. In the absence of a clear-cut history and physical examination warranting the diagnosis, a clinical test which would reveal the presence of hyperthyroidism would naturally be of the greatest importance. Such a clinical aid and test is available. We refer to the use of adrenalin to elicit a state of hypersensitiveness of the sympathetic nervous system such as is present in conditions of hyperthyroidism. We feel that the determination of a state of constitutional hypersensitiveness to adrenalin, injected subcutaneously, warrants the belief that a clinical state of hyperthyroidism exists. The use of this test by Goetch *New York State Journal of Medicine*, July, 1918) over a period of three years in conditions of hyperthyroidism, which were later confirmed by operation and microscopic study of the gland-tissue removed, has convinced us of the reliability of the adrenalin hypersensitiveness test.

To support our contention, which is, that hyperthyroidism is responsible for the general symptoms usually attributed to tuberculosis in most of the cases where the presence of clinical tuberculosis is questionable, and also where the tuberculous lesion is thought to be insufficiently active to account for the severity of the symptoms, we applied the adrenalin test, at first, to those patients in whom the diagnosis of tuberculosis was questionable, and later as a routine measure to all patients entering the Trudeau Sanatorium. By so doing it is clear that, hypothetically, we should be dealing with three classes of patients: first, those with frank tuberculosis, secondly those with hyperthyroidsim complicating the tuberculosis, and thirdly, those with definite hyperthryoidism only. There are patients who present the above-mentioned syndrome of symptoms common to all of these groups, namely fatigue, asthenia, loss of

weight and strength, increased or normal pulse rate, nervousness, and possibly slight elevation of temperature. It is this very similarity in the symptoms exhibited by these groups which has hitherto made the differential diagnosis so difficult.

Positive results in support of this view have been obtained in the comparatively brief time that we have been at work on the problem and we think these justify this preliminary report.

The technique of carrying out the test is as follows:

We want the patient to be as calm and restful as possible before the test so that the reaction to the adrenalin will stand out sharply in contrast. Accordingly the patient is put to bed the previous day and is reassured by the attending physician that the test will be in no way painful or associated with any danger. At this time, too, the standard case-history is supplemented by a history taken with special reference to symptoms of thyroid disturbances. One must determine the presence or absence of nervousness, throbbing, tachycardia, tremour, depressions, crying spells, struma, apprehensions, hot and cold flushes, cold hands and feet, fainting spells, memory lapses, and gastro-intestinal upsets. The regular routine physical examination is amplified by a detailed scrutiny of the signs suggestive of hyperthyroidism, such as positive eye-signs (Joffroy, Moebius, Von Graefe and Dalrymple), tremour, struma, thrills or bruits over the thyroid, throbbing of the carotids and of the abdominal aorta, dermatographism, the condition and distribution of the hair, and slight œdema of the eyelids, legs or hands. In this connection it should be borne in mind that hyperthyroidism may exist with negative eye-signs and only indefinite clinical findings in the thyroid gland. Consequently we feel that the response to adrenalin is a much more dependable criterion of hyperactivity of the gland.

On the day of the test the patient is placed as nearly as possible under normal conditions. By this we mean in a warm room without the appliances such as hot water bottles, heating devices, etc., which are common to the outdoor treatment of tuberculosis. The patient, of course, is to take his meals in bed. We emphasize these precautions because of the well-known hypersensitiveness and irritability of hyperthyroid and tuberculous patients. Because of the tendency of the thyroid to hyperactivity at the menstrual period the test is not given during this time.

We proceed with the test as follows: *"Two readings are

* Goetsch, E.—*New York State Journal of Medicine*, July, 1918, pp. 22-24.

taken, at five minute intervals, of the blood pressure, systolic and diastolic, pulse rate, and respiration. A note is made of the subjective and objective condition of the patient. This includes the state of the subjective nervous manifestations, the throbbing, heat and cold sensations, asthenia, and the objective signs, such as pallor or flushing of the hands and face, the size of the pupils, throbbing of the neck vessels and precordium, tremour, temperature of the hands and feet, perspiration, and any other characteristic signs or symptoms noticed. These signs are all noted previous to the injection of the adrenalin so that comparison may be made after the injection.

A hypodermic syringe armed with a fine needle which, when inserted, causes little discomfort, is then used to inject 0·5 c.c. (7·5 minims) of the commercial 1-1000 solution of adrenalin chloride (Parks, Davis & Co.) into the deltoid region, subcutaneously. Intramuscular and intravenous injections are not given. Readings are then made every two and one-half minutes for ten minutes, then every five minutes up to one hour, and then every ten minutes for half an hour or longer. At the end of one and a half hours the reaction has usually entirely passed off, sometimes earlier. The repeated early readings are made in order not to miss certain reactions on the part of the pulse and blood pressure that may come on in less than five minutes after the injection is made. This is particularly true of cases of active hyperthyroidism.

In a positive reaction there is usually an early rise in blood pressure and pulse of over ten points at least; there may be a rise of as much as fifty points or even more. In the course of thirty to thirty-five minutes there is a moderate fall then a second slight secondary rise, then a second fall to the normal in about one and one-half hours. Along with those one sees an exaggeration of the clinical picture of hyperthyroidism brought out, especially the nervous manifestations. The particular symptoms of which the patient has complained are usually increased, and in addition there are brought out many symptoms which have been latent. Thus it is not uncommon to have extra-systoles brought out, after the injections of the adrenalin. The patient is usually aware of them and may tell one that she has felt this same thing a year or two previously, at which time the symptoms of the disease were more active.

The following may all or in part be found: Increased tremour, apprehension, throbbing, asthenia, and in fact an increase of any of the symtoms which the patient may have complained. Vasomotor changes may be present; namely, an early pallor of the

face, lips, and fingers, due to vasoconstriction, to be followed in fifteen to thirty minutes by a stage of vasodilation with flushing and sweating. There may be a slight rise of temperature and a slight diuresis.

In order to interpret a test as positive we have regarded it as necessary to have a majority of these signs and symptoms definitely brought out or increased. Thus there is at times a considerable increase of pulse rate without much increase in systolic blood pressure, but with a considerable increase or exacerbation of the objective signs and symptoms; or there may be an increase of ten points in the pulse and blood pressure and a moderate increase of the symptoms and signs; or again, there may be only slight changes in pulse and blood pressure and considerable change in signs and symptoms. These may be regarded as positive. In a word, then, one must consider the entire clinical picture produced in order to gain a correct interpretation, just as in the disease itself one cannot expect every one of the characteristic signs and symptoms to be present in order to make a diagnosis.

In this report it is our desire to present briefly the results thus far obtained in our studies of forty cases. The diagnosis of these, as made by the Sanatorium staff, place them in the three following groups:

(1) In the first group there are eighteen in whom clinical tuberculosis was questionable, (2) in the second group there are sixteen with inactive clinical tuberculosis, and (3) in the third group there are six in whom clinical tuberculosis was definitely active. The terms "active" and "inactive" are based upon the latest conception of the Trudeau staff, as set forth in a recent article by Brown and Petroff.*

As is indicated in the table below, of the eighteen cases belonging to the "clinical tuberculosis questionable" group, there were ten who reacted positively to the adrenalin test, and eight who showed an entirely negative reaction. We wish to emphasize the fact that in practically all the cases of this group there was a clinical symdrome of symptoms which was suggestive of either incipient tuberculosis or possible hyperthyroidism. In the ten cases with a positive adrenalin hypersensitiveness the intensity of the reaction varied in a way remarkably parallel with the severity of the symptoms exhibited by the patient. Furthermore, the majority of these

* Brown, Lawrason and Petroff, S. A., "The Clinical Value of Complement Fixation in Pulmonary Tuberculosis Based on a Study of 540 cases." *The Americal Review of Tuberculosis*, 1918, II, 525-540.

cases showed only indefinite signs of hyperthyroidism by physical examination, and therefore had it not been for the additional diagnostic help afforded by the adrenalin test it would have been impossible, we feel, to state definitely whether or not hyperthyroidism was responsible for their symptoms.

In Group II, namely the "clinical tuberculosis inactive" group, some of whom presented the symptomatology common to both tuberculosis and hyperthyroidism, others a symptomatology not characteristic of either condition, we found that out of the sixteen cases, nine showed a positive response to the adrenalin test. The suggestive symptoms and physical findings, but particularly the positive adrenalin reaction, permit us to say definitely that these patients were suffering with hyperthyroidism, varying in degree from mildly to moderately positive. The hyperthyroidism in these cases was a complicating feature in their tuberculosis.

To our great satisfaction we found in Group III, consisting of six cases in whom there was a definitely but moderately active clinical tuberculosis, that the reaction to adrenalin was negative in all of them. We wish to point out, however, that in three cases there was a late slight typical reaction, namely a rise in blood pressure and pulse at the end of an hour or an hour and one-half, which is quite contrary to the typical hyperthyroidism reaction in which, at this time, the pulse and blood pressure are approximately the same as before the test. Furthermore, there was a conspicuous absence of the symptoms and signs so characteristic of the adrenalin response in hyperthyroidism.

In Table I we have listed the cases belonging to the three groups discussed above. The degree of the response to the adrenalin we have conveniently designated by the use of the "+" sign. A mild response is indicated by the use of "+", a moderate by "++", and a marked response is indicated by "+++". A negative reaction is indicated by the zero sign.

Analysis of Results

The importance of being able to diagnose a condition from which many patients suffer, namely a syndrome similar in many respects to that of early tuberculosis, in whom, however, clinical tuberculosis is not proved, is apparent to all workers in the field of tuberculosis. In fact there must be many patients presenting themselves at sanatoria for tuberculosis with symptoms which appear not to be accounted for by the amount of tuberculosis, either

TABLE I.

Clinical Tuberculosis Questionable		Clinical Tuberculosis Inactive		Clinical Tuberculosis Active	
Case No.	Adrenalin Reaction	Case No.	Adrenalin Reaction	Case No.	Adrenalin Reaction
5074	+++	4978	++	5056	0
5092	++	5079	++	5091	0
5092 B	+++	5079 A	+++	5071	0
5092 C	+++	4967	+++	5075	0
5024	0	5085	0	4126	0
5072	0	5073	0	4973	0
5088	0	5022	0		
5084	0	5022 B	0		
5077	0	5022 C	0		
5077 A	+++	4995	++		
4975	++	5105	++		
5008	+++	5107	+		
5009	+++	5109	++		
5110	++	5125	0		
5103	+++	5123	0		
5111	0	5090	++		
5124	0				
5031	0				

				Totals
Positive	10	9	0	19
Negative	8	8	6	21

active or inactive, which they have. Of this fairly large number of patients, we feel, as a result of our brief studies, that there is a considerable percentage suffering from hyperthyroidism. We have come to this conclusion as a consequence of the fact that there is in many of these patients a positive adrenalin hypersentitiveness. Furthermore, confirmatory support is afforded by a carefully taken history and physical examination.

We wish to make clear that in the first place the constitutional hypersensitiveness to adrenalin is an indicator of excessive thyroid function. According to the degree of the response we are permitted to draw conclusions as to the degree of thyroid overfunction. Consequently, there must of necessity be all degrees of thyroid overfunction from the mildest to the most marked. There are doubtless many individuals with a mild hyperthyroidism who respond mildly to the adrenalin test, and who have not been greatly annoyed by their symptoms. The fact that these patients react

mildly to adrenalin does not mean that in our opinion, they should receive medical and possibly surgical treatment for this hyperthyroidism. These individuals are living in comparative comfort as far as their hyperthyroidism is concerned, and are not incapacitated by it. Rest and well-regulated hygienic life is indicated for them whether they have or have not tuberculosis. If, however, the hyperthyroidism is incapacitating or even of such a degree as to be definitely annoying, then after the failure of a faithfully carried-out rest and hygienic regimen, it is time to think of surgical measures.

In those unfortunate individuals suffering from both tuberculosis and hyperthyroidism, the problem becomes more complex. It is of course apparent that the very nature of hyperthyroidism is such as to make it impossible for them to carry out the rigid rest regimen which their tuberculosis requires. The well-known nervousness and often extreme restlessness of these patients might readily defeat the ends to be gained by a well-regulated rest cure. On the other hand a surgical operation, unless definitely advisable, might be contra-indicated on account of the nature of the tuberculosis present. The question as to whether the tuberculosis or the hyperthyroidism is to receive predominant attention at the beginning of treatment rests with the physician in charge.

Another point we wish to bring out is that a mild hyperthyroidism may have existed in an individual years before the symptoms become so severe as to cause the patient to seek medical advice. When finally the patient does seek aid, he is found to have a rather clear history of hyperthyroidism; the physical findings may or may not be especially prominent, but there is a moderate or marked reaction to adrenalin. This would mean to us that his disease reached the stage where medical or surgical treatment is necessary. The situation here is analogous to that in tuberculosis where there may be an incipient stage of the disease not apparent to the patient, which later develops into a frank clinical tuberculosis. Our point is this: that it is just as wrong to say that a patient with a mild adrenalin hypersensitiveness has not a mild hyperthyroidism which may not require treatment at the time, as it would be to say that a patient had had his tuberculosis only during the time that it was clearly active.

It should be mentioned furthermore, that the adrenalin hypersensitiveness reaction affords us a means of early diagnosis of hyperthyroidism at a stage before the disease has seriously damaged the individual or perhaps incapacitated him. It thus allows us to appreciate an early mild hyperthyroid element in tuberculosis

should the two diseases exist concomitantly. The interesting question as to whether a mild hyperthyroidism may not have been the causative factor in his subsequent breakdown with tuberculosis, or whether the tuberculosis may in some instances elicit a mild hyperthyroidism, we shall not attempt to discuss in this preliminary report.

Summary

In probably every sanatorium for tuberculosis, and in fact in the practice of every physisican interested in this disease, there are patients who symptomatically might be considered as having either incipient tuberculosis or mild to moderate hyperthyroidism or both. The problem then is one of determining whether these symptoms are due to tuberculosis or hyperthyroidism or both. In many instances the severity of the clinical syndrome of symptoms appears to be out of all proportion to the amount or activity of the tuberculosis present. Heretofore it has been a matter of opinion and oftentimes a diversity of opinion among members of the same staff as to whether the amount and activity of tuberculosis present was to be considered responsible for the symptoms. Naturally, when the diagnosis depended upon such a difference of opinion difficulties arose, and in the end other patients have doubtless often suffered. We felt justified at the present time in offering a diagnostic help in these cases, namely a means of determining whether the disease from which the patients are suffering is purely a tuberculosis, a tuberculosis complicated by hyperthyroidism or a pure hyperthyroidism. The diagnostic aid consists in the determination of the constitutional hypersensitiveness to adrenalin. Hyperthyroidism, whether or not associated with tuberculosis, will give a positive reaction to adrenalin. Tuberculosis uncomplicated by hyperthyroidism, as it appears from our brief series of cases, does not react positively to adrenalin. We feel that in a considerable number of border line cases presenting symptoms more or less characteristic both of tuberculosis and hyperthyroidism, we can now pick out those suffering with hyperthyroidism. The value and importance of such a diagnostic aid to the patient need hardly be mentioned.

In conclusion, we would like to thank the medical staff of the Trudeau Sanatorium for their ever-ready help and interest.

TYPHOID SPINE*

By Sir William Osler, Bart., M.D., F.R.S.

Regius Professor of Medicine, Oxford, and Consulting Physician to No. 15 Canadian General Hospital

LET me begin at the end by reading a letter received January 3rd, National Hospital, Queen Square, London:

Dear Sir William—Sapper C., typhoid spine, was admitted yesterday. You will be interested to know that he is now walking normally. It was a good case, although he walked after ten minutes' treatment.

Yours sincerely,

L. R. Yealland.

Had Sapper C. gone to Lourdes—had he gone to our own Canadian Shrine, St. Anne de Beaupré, what a miracle! Paralyzed for nearly two years! unable to move body or legs; never out of his bed! and yet he walked in ten minutes! Well, it is a miracle all the same, an illustration of the faith that heals—not the same sort of faith, however, that the lame man at Lystra had, the firm persuasion that Paul and Barnabas were able to cure him, for I am afraid from what Dr. Yealland says, and from what we know, Sapper C. was not very anxious to get well.

Now to refresh your memory of the case, which is an important one from many standpoints. I saw the patient in April, 1916, with Dr. Whithall, at the V.A.D. Hospital, Maidenhead. The condition was as follows: Excessive nervousness and apprehension, so that he broke into a profuse sweat, trembled, and was very fearful lest we should attempt to move him. He was well-nourished, no mental disturbance, special senses normal, pupils widely dilated. When stripped a diffuse blush spread over the trunk, and there was an unusually persistent condition of goose skin. He was unable to move the body, any attempt being followed by agonizing pain in the back. The legs looked normal, and there was no wast-

* Clinical Remarks, January 7th, No. 15 Canadian General Hospital, Cleveden, Taplow

ing, no disturbance of sensation. An attempt to sit up was followed by severe pain in the back; with great difficulty he was turned on the left side, but it was impossible to get him in the sitting posture. The spine was straight, no projection or unusual prominence. Below the mid-dorsal region it was very painful on pressure, and over the lumbar spines the slightest touch caused him to cry out. The examination of the abdomen was negative; nothing could be felt on either side or in the iliac regions on the deepest pressure. The spleen was not palpable. The legs could not be lifted from the bed or drawn up. On making the attempt they went into clonic spasm. The toes could be moved and the ankles flexed. The temperature of the legs was normal, and there were no trophic changes.

Sensation: Normal in hands and face. On the skin of abdomen, in a band about a hand's-breadth in width below the costal margin, there was extreme hyperæsthesia; the slightest touch caused him to cry out; he could not even bear the weight of the bedclothes. It extended to the back, but was not nearly so marked as in front. Below the navel the sensation was normal. On the skin of the legs he felt the pin-prick everywhere, and recognized the difference between heat and cold.

Reflexes: Knee-jerks exaggerated, slight rectus clonus, no ankle clonus; Babinski sign not present. Cremasteric and abdominal reflexes present. Bowels and bladder normal.

In February, 1916, the patient had an attack of typhoid fever, and was treated in the V.A.D. Hospital, Maidenhead. Though prolonged, it was not a severe attack, the temperature never rising above 104° F. The convalescence was slow, and he remained in the hospital all the summer. In October he had another febrile attack which was thought to be influenza. Following this, he began to have pains in the back and stiffness; these symptoms have persisted, and he has never been out of bed, and has become more and more incapacitated.

I asked to have the patient transferred here to the Duchess of Connaught's Hospital, Cleveden, where he was admitted May 7th, 1917. A spinal jacket gave great relief to the pain in the back, and the hyperæsthetic girdle rapidly disappeared. In the eight months the changes have been an improvement in his general condition, manifested in a gain of weight, in less marked basal motor changes, and less apprehension and dread of pain. The area of hyperæsthesia has disappeared. The rigidity and immobility of the back has persisted. We have never been able to get him to sit up.

An attempt to move the legs at once brought on the clonic spasm, and there always was an appearance of unusual effort in attempting to make the movement. Night and morning one of the nurses made him draw the legs up and down, and this of late he has been able to do pretty well, and with less tremor. The reflexes have remained the same, and there has been no anæsthesia, though at times the tactile sensations seemed less acute than at others.

Shortly after admission to Taplow an *x*-ray picture was taken which showed a very dark shadow in front of the lower dorsal and lumbar vertebræ, practically identical with the shadows shown in Figs. 2 and 6 of Dr. J. B. Carnett's article in *The Annals of Surgery*, 1915. I submitted the picture to a number of experts, some of whom expressed doubts as to the significance of so large and dark a shadow. Major Morgan, when he took charge of the department, very kindly made a special study of the case, and the subsequent *x*-ray pictures showed a spine normal in every particular.

The case has attracted a great deal of interest, and in the weekly demonstrations I could not always carry conviction to the minds of visitors that the condition was purely functional, and that the patient would ultimately get well. My personal education in the disease is worth noting:—

The first case one sees of a special disease or complication usually fixes itself in the memory. In 1887, I was asked by Dr. Grassett, of Toronto, to see with him a young officer invalided from India with paralysis after typhoid fever. Healthy looking, excessively nervous, unable to walk or to move in bed, the striking feature was a painful stiff back, so that any attempt to turn or move made him scream. There was nothing to be made out on examination except tenderness in the dorsal region. The legs were weak, but there was no paralysis, and the bladder and bowels were unaffected. The pain and stiffness had lasted for more than five months, and he was brought home believed to be permanently disabled. He was so nervous that I regarded the whole condition as functional, ordered a jacket with massage to the legs, urged him to get up and go out and gave a favourable prognosis. The improvement was rapid and progressive, and he got quite well. This was my introduction to the condition which Gibney, of New York, first described in 1887 as typhoid spine. In 1890, at a meeting of the Association of American Physicians, Dr. Loomis called our attention to Gibney's observations. In Series I of our "Studies in Typhoid Fever", *John Hopkins Hospital Reports*, vol. iv, p. 73, I wrote a paper with the title, "On the Neurosis following Enteric Fever, known as

the Typhoid Spine" (the first communication on the subject to follow Gibney's), in which I reported two cases, and, in opposition to Dr. Gibney, took the view that it was a functional disturbance, analogous to "railway spine" or "hysterical spine". I was much impressed with the rapidity with which the cases recovered—far too rapidly in Case II for a spondylitis. In Series II of the "Typhoid Studies", *John Hopkins Hospital Reports*, vol. v, p. 315, I reported three additional cases, two very mild, all negative on examination, which improved rapidly with the Paquelin cautery. In Series III of the "Typhoid Studies," *John Hopkins Hospital Reports*, vol. viii, p. 485, I reported a mild case of "tender spine". To this time I had seen nothing to make me change my view of the functional character of the trouble. Meanwhile we had seen many cases of the bone lesions following the disease, and it always seemed a strong point in favour of my view that the typhoid spine never presented any swelling, and never went on to suppuration. In 1902 I had to change my mind. I saw a patient of Dr. Reinhardt, in the fourth week of convalescence, with stiff, painful back, weak legs, excessive nervousness, but in addition a well-marked painful swelling just above the right sacro-iliac articulation. Convalescence was slow, but no suppuration followed. Several other cases were seen, and with the help of Dr. T. McCrae I reached the belief that Gibney's original view was correct for some cases. Careful *x*-ray examinations showed spinal changes, and in a patient at the Clinique in July, 1904, Dr. Baetjer demonstrated a definite deposit of bone filling the space between the second and third lumbar vertebrae. In 1906 Dr. McCrae reported this case and another with bone changes in the spine,* and in the "System of Medicine" we edited together he gave an excellent analysis of the condition, and grouped the cases into three categories. First, those in which the hysterical features predominate. Secondly, cases with periostitis, or perispondylitis, with fever, pain, rigidity, and evidence of nerve root involvement. And thirdly, a group of cases with definite objective changes in the spine, as shown by the *x*-ray pictures, as well as by examination.

I confess freely to have taken too one-sided a view of the condition, but it was not without a strong basis of support. Such a prompt recovery, such as followed in several of the reported cases, seemed quite inconsistent with the existence of a spondylitis. In showing a case at the Johns Hopkins Medical Society, 1901, the

* *Amer. Journ. Med. Science*, 1906, ii, p. 140.

following features were dwelt upon as indicating the functional character of the condition: First a state of neurasthenia with vasomotor changes, and in not a few cases the definite stigmata of hysteria. Secondly, stiffness of the back, persisting for weeks and months, is associated with pain, sometimes of an agonizing character, on movement. Thirdly, pain on pressure over certain spinal processes. Fourthly, a negative local examination, with the absence of fever. And lastly, in many cases, prompt recovery, with the use of the Paquelin cautery, and measures directed to the neurotic condition.

This case of Sapper C. is a strong confirmation of this view. You saw him last Monday after the spinal jacket was removed—still very neurotic, the spine absolutely rigid; we could not induce him to sit up; he could just lift his legs off the bed with the same type of general clonic tremor. I know that some of you felt hopeless about him, and he had got hopeless about himself, but new surroundings, a new mind, and very skilfully applied methods did in ten minutes what we have failed to do in a year—put him on his feet. I saw him on the 3rd looking well, walking well, and very happy to be on his legs again.

The literature of typhoid spine to 1905 is fully analyzed by Karl Fluss, *Centralblatt f.d. Grenzgebiete der Medizin und Chirurgie*, Bd. viii, and by Elkin and Halpenny in vol. i of the *British Journal of Surgery*, 1914. More than 100 cases have been reported, a large proportion in males. The onset is usually during convalescence, but has been weeks after, and has followed a sudden jar or twist or a blow. Constitutional disturbances are present in all cases. Fever is usually absent, but a range of 100° to 100·5° F. is not uncommon. Paroxysms of fever have been described, and there may be marked leucocytosis. A change in the mental condition has been noted in the majority of instances. The patients are excitable, apprehensive, self-centred, with the features of neurasthenia, and very often positive hysteria. In Sapper C.'s case this has been a striking phenomenon throughout. He was like a shell-shock subject, and at the first examination had an emotional storm with profuse sweating, goose skin, and then a vasomotor hyperæmia spread over the entire trunk. I have not seen a case without neurotic manifestations in some degree, even when signs of local disease were present.

Perhaps the most interesting case on record is the study by Dr. Leonard Ely, of New York, of his own attack (*Medical Record*, September 20th, 1902). One hesitates to suggest the existence of

hysteria in a professional brother, but one may say, at any rate, that the condition simulated it, and he confesses to have been "considered hysterical by his nurses". The professional baseball pitcher, whose protracted case is reported by Carnett; the cases of Lovett and Withington and Taylor's case had hysterical features combined with organic changes.

Of the local features, pain in the back, particularly on movement, is the most constant, and it may be of extraordinary severity, so that the patient screams on the slightest movement. It comes on in paroxysms, and is aggravated by the slightest jar or at any attempt to move. Patients have had to be chloroformed when they use the bed pan, and the threat of suicide has been recorded in several instances. The pain may be of a definite nerve-root character, extending round one or both sides, or it may pass down one or both legs.

Tenderness on pressure is present over the spinal processes of varying numbers, sometimes limited in the lower dorsal and lumbar regions. Rigidity of the back is a constant feature; the patients are unable to stoop, and have a difficulty in raising themselves to the sitting posture. One patient came into the hospital supported by two friends almost bowed double, and it was only with the greatest difficulty that the back was straightened.

If, as some orthopædic surgeons hold, a rigid back indicates organic disease, all of these patients had it, and no case I have seen has been more marked than in Sapper C. Clonic contraction of the muscles has been present in a number of instances. It may be nothing more than the fine tremor on attempting moving of the legs; but there is one type of muscular contraction in these cases that is of great importance, as to my mind it is an unerring stigma of hysteria. I refer to the rhythmic contraction of the abdominal muscles, noted by Ely in his own case, and present in two of Carnett's cases. In a patient admitted in October, 1902, with pain in the back and the ordinary features of typhoid spine, the abdominal muscles were contracting at the rate of 75 to the minute, which gave a very remarkable appearance to the flanks, which were moved in and out like a pulsation.

* * * Inability to use the legs is present in severe cases, but there is no actual paralysis, no wasting, and the features are quite unlike post-typhoid paraplegia from myelitis or from neuritis. Reflexes are increased, but not changed in type. Disturbances of sensation in the form of hyperæsthesia are common, particularly in the back. Anæsthesia may be present, and it is interesting that Dr. Yealland,

in Sapper C.'s case, found a stocking anæsthesia, which certainly was not present on any occasion on which I or others examined him.

The last and important point is the evidence which exists in some cases for disease of the spine. This is of two forms: Kyphosis has been present, and of a type that could only occur from positive disease of the bone. Swelling of the soft parts on either side of the spine has been described and was present, as I have stated, in the patient seen by Dr. Reinhardt, the only one of the ten or twelve cases I have seen in which on physical examination changes were present. Of ordinary scoliosis and of associated atrophy of the lumbar muscles one cannot be so certain, as they are common enough in hysteria.

The *x*-ray picture has been studied now in a large number of cases. Osteoporosis, absorption of the intervertebral discs, and local bone proliferation have been described. It is extraordinary how few satisfactory skiagrams of the condition exist. I have looked in vain for one through the special journals, and some that have been published elsewhere are in the highest degree unsatisfactory. It is not fair to criticize a print without the plate, but Figs. 2 and 6, illustrating Dr. Carnett's paper, have had an extraordinary resemblance to the first plate taken of Sapper C., but subsequent study showed them to be artefacts, and the spine and adjacent bones show no trace of disease.

Upon one remarkable feature all writers dwell. Unlike ordinary typhoid periostitis the spondylitis rarely (if ever) goes on to suppuration. When present the lesion must differ essentially from that which we see in the long bones and the ribs. Typhoid bacilli have been frequently found in the bone marrow of the vertebræ, and there is no inherent reason why similar inflammatory changes should not be produced as in other bones. We know, indeed, from the presence of the kyphosis and from the *x*-ray picture that such changes do occur. Why they are not seen more often is, I believe, that they are not always present, and that we must recognize functional variety, which has its counterpart in certain forms of hysterical and railway spine.

A FUNCTIONAL CONCEPTION OF PATHOLOGY AS A BASIS FOR THE DIAGNOSIS AND TREATMENT OF HEART DISEASE

By W. S. Morrow, M.D.,

Montreal

A FEW years ago the pathology of the heart was taught in terms of the inflammatory changes in the different valves, and a heart was diagnosed as good or bad according to the number of murmurs that could be heard over it with a stethoscope. To-day we recognize that the functional capacity of the heart muscle is of far greater importance. The changes in the finer structure and physiological properties of the myocardium may not produce such obvious signs as valvular murmurs, but they do give rise to such signs and symptoms as may be detected by a careful examination and render possible a reasonably correct conclusion as to the ability of the heart to carry on its work.

Where we used to diagnose and treat cases of heart disease as mitral stenosis, or aortic regurgitation, we now think of them as various degrees of failure in the powers of the heart muscle. We are often able to go further and determine in which particular capacity or function of the heart muscle the signs of failure present themselves most conspicuously. As Peabody says, "the study of dead form has given way to the study of living processes." If a further illustration of this tendency be wanted, it may be found in the modern attitude towards diseases of the kidneys.

Whereas, a few years ago, the clinician tried to divide kidney disease into parenchymatous nephritis, interstitial nephritis and waxy kidney, he now endeavours rather to estimate the capacity of the kidneys to secrete the various constituents of urine, and thinks in terms of nitrogen retention, chloride retention, and water retention. He knows now that the classical signs of kidney disease, such as albuminuria, casts, change in the urea content, and specific gravity, do not by any means furnish an infallible guide to its functional capacity, or to the prognosis and treatment of the case.

Read before the Medical Society of Nova Scotia at the sixty-fifth annual meeting uly 3rd, 1918.

The functional conception of the pathology of the kidney is still in its infancy, the gaps in our knowledge are many, and the technique used in diagnosis is comparatively difficult, so that it is only beginning to be assimilated by the profession at large, and will better lend itself to discussion in an address like the present after the lapse of a few more years.

In the case of the heart, matters have reached a more advanced stage. It is now over thirty years since Gaskell published the first of his researches on which were based the myogenic theory of the heart beat.

It is sixteen years since Sir James Mackenzie, then a comparatively obscure provincial practitioner in Burnley, England, published his book on "The Pulse". This prepared the profession to receive and understand his epoch-making work on "Diseases of the Heart," which was published a few years later. Since that time few subjects in the whole of medicine have received the attention of a greater number of workers, and few advances in knowledge have been better received, or more fruitful in practical results.

In this address then, I propose to review with you some of the main facts in what we may still call the recent advances in the physiology and pathology of the heart, and to point out some applications of this knowledge to cases of heart disease.

The heart muscle is of two kinds, mature and primitive. The mature muscle forms the greater part of the walls of both auricles and ventricles. It is not sharply divided into separate fibres, but forms a branching network with nuclei at frequent intervals. Many strands of muscle are common to both auricles or both ventricles establishing anatomical and functional continuity between them, but there is no continuity from auricles to ventricles through this kind of tissue.

It is on the mature muscle that the heart depends for the tonic contraction which preserves the size and form of the chambers, and also for the force or strength of its beats through which the circulation is maintained.

The primitive cardiac muscle represents the less differentiated remains of the primitive cardiac tube of the embryo and approaches embryonic muscle tissue in the size and form of its fibres, although these show some variations in different parts of the heart. This primitive muscle is widely distributed, but is more especially prominent in three situations.

1. The sino-auricular node situated at the junction of the superior vena cava with the right auricle, is believed to be the

chief representative in the adult of the sinus venosus where the heart beat begins in the embryo and lower vertebrates. The sino-auricular node is the place of origin of the normal heart beat, has a rich blood and nerve supply, and scattered among the characteristic primitive muscle fibres, contains numerous ganglion cells. From it, strands of tissue pass out to all parts of the auricular wall carrying the stimuli which cause them to enter into contraction more or less simultaneously.

2. The auriculo-ventricular node at the base of the inter-auricular septem and near the mouth of the coronary sinus, is the adult representative of the auricular ring of the primitive heart. It is second only to the sino-auricular node in stimulus production and rhythmic activity and receives from it numerous fibres. This is a situation in which many extra systoles arise and it is an important distributing station for the contraction wave of the heart.

3. The auriculo-ventricular bundle originating in this node and passing down under the tricuspid valve to the inter-ventricular septum, is the only muscular connection between auricles and ventricles. It conducts the contraction wave down from the auricles and through its connections with a network of so-called Purkinje's fibres, carries it to all parts of both ventricles.

There are two rival theories as to the part played in cardiac function by nervous and muscular elements, respectively.

According to the "neurogenic theory" the cardiac rhythm depends for its origin and propagation on the nervous tissues of the heart. This has been widely advocated by experimental physiologists, but it has not contributed to practical advance in clinical medicine.

The "myogenic theory" attributes the essential activities of the heart to the muscular fibres and allows to the nervous elements only a trophic and regulative influence. In all probability the myogenic theory, as we now know it, is not the last word on the subject, but it has formed the foundation for most of the recent advances in the practical handling of heart cases and is probably the nearest approach to the truth that we have yet attained.

According to this view of the physiology of the heart, the muscular tissues, taken collectively, possess the following properties: Stimulus-production, excitability, conductivity, contractility and tonicity.

The extrinsic nerves and the intra-cardiac ganglia control, but do not initiate these functions. They may augment or inhibit

the activity of the heart muscle in the performance of its various functions, but that is all.

With this brief introduction we will proceed to consider the more practical questions of the diagnosis and treatment of heart failure.

The essential diagnosis of heart disease does not depend on the recognition of a murmur, but on the perception that the heart is unable to maintain an efficient circulation. The most important question to ask a prospective heart patient is how much effort it requires to cause shortness of breath or precordial distress. Where one or both of these symptoms are present during rest, one should think of absolute cardiac insufficiency; when they occur only on slight exertion, of relative insufficiency. The diagnosis is to be confirmed by excluding other possible causes for these symptoms, and by giving due weight to any signs of heart disease which may be observed.

Some writers advocate the estimation of the functional capacity of the heart by the effect of standard exercises on the pulse rate and on blood pressure, and the interval elapsing before these return to their original level. Where so many different elements have to be considered, however, any semblance of scientific accuracy predisposes one to shut his eyes to possible fallacies and may be a source of weakness rather than of strength. Personally I am quite satisfied with the results obtained by questioning my patients as to their ability to negotiate well-known hills without distress, and supplementing their statements by my own observations as the opportunity presents itself.

Where distress occurs from a smaller effort than seems proper to the age and sex of the individual, the physician must consider whether other causes are at work, such as anaemia or corpulence, lung or kidney disease, or poor condition due to lack of training. These considerations may be kept in mind and worked out as the examination proceeds. The routine examination of a case of suspected heart failure should include attention to the following points. While obtaining the personal history and the history of the present illness, questions should be asked as to past and present infections, especially rheumatism, chorea, tonsilitis, scarlet fever and syphilis; the patient should be cross-questioned as to the abuse of alcohol, tobacco, tea and coffee; enquiries should be made about physical or mental strain, either past or present; a description should be obtained of the origin and development of any symptoms of circulatory failure that may be present, such as shortness of breath,

precordial pain, frequent or violent action of the heart, cough, disorders of digestion, swelling of the legs or abdomen. Inspection should be made of the face for anæmia, flushed cheeks, cyanosis and exophthalmos; of the mouth for bad teeth, which so often lead to indigestion and distended stomach with pressure against the heart; of the neck for engorged and pulsating vessels, as observed in either the erect or recumbent posture; and also for the condition of the thyroid gland. In the arm, the arteries should be carefully palpated and rolled beneath the fingers for signs of thickening or calcareous change; the pulse should be examined as to rate, size, hardness and regularity; the blood pressure should be taken, preferably by the ausculatory method, so as to estimate both the systolic and diastolic pressure. If the pulse is large, or the pulse pressure greater than normal, the fingers should be examined for capillary pulsation. The chest should be examined by inspection, palpation and auscultation over the heart, aorta and lungs. The liver should be percussed and if possible palpated. The abdomen should be examined for ascites, gas distension, visceroptosis and enlarged spleen. The possibility of abdominal tumours should not be entirely forgotten. The legs should be examined for œdema, varicose veins and signs of poor circulation. The urine should be obtained and tested as fully as possible or according to the indications present.

Having completed such an examination we should be ready to form a reasonably accurate opinion of the functional capacity of the heart and to lay out an appropriate plan of treatment. In a few cases some further tests may suggest themselves, such as, investigation of the eye and finger movements in suspected hyperthyroidism, *x*-ray examination of the aorta for suspected aneurism, or the elucidation of an arrhythmia, by the graphic method or the electro-cardiogram.

In most cases of serious organic disease of the heart the mature cardiac muscle is involved in the disease, and there is failure in one or both of the two functions most characteristic of this kind of muscle, namely, contractility and tonicity.

When from disease, overwork, or inherent weakness, the heart becomes unable to cope with the work required of it, one of two things may happen:

1. The heart may make supreme efforts to empty its chambers, in spite of its disability, and give evidence of the strain it is under by pain or distress. The pain may be referred to the precordium, arms, or neck and is comparable to the colic of other hollow viscera

when contracting against great resistance. Along with the subjective symptoms of pain and distress one may sometimes note in the pulse an irregularity in the force of the different beats approaching more or less to a typical pulsus alternans. Where such a combination of symptoms presents itself, there is a strong probability that the heart muscle is suffering from a form of failure affecting especially the function of contractility. In such cases the circulation may not show much evidence of insufficiency during rest. There may be little or no venous stasis or œdema. The pulse may be moderate in rate and of good volume; and the heart may show little enlargement or may even seem small. On slight exertion, however, and sometimes even at rest, the heart gives evidence of the distress under which it is labouring, by sensations of oppression or pain in the chest, and perhaps by numbness and pain in the left arm. Failure of contractility is seen most typically in cases of angina pectoris, but we will return to this subject again.

2. In another group of cases the heart saves itself at the expense of the rest of the body. As the chambers cannot empty themselves easily they do so only partially, and their flaccid walls give way to make room for an increased amount of blood. Signs of dilatation appear. The muscular rings around the mitral and tricuspid orifices participate in the dilatation and allow an increasing amount of regurgitation. Regurgitation by a safety valve action relieves the pressure in the ventricles. If there has been precordial pain, it becomes less severe or disappears, but the veins become engorged, the liver enlarges, digestion is impaired, the circulation through the kidneys slows down and dropsy develops in the legs and abdomen. As the circulation becomes less efficient the heart begins to suffer with the other organs and a vicious circle is established, giving the condition a progressive character. Such is the picture of a typical case of failure of tonicity.

These two great types of heart failure may be characterized by calling failure of contractility the heart failure of symptoms, and failure of tonicity the heart failure of signs. That they are essentially distinct is proved by the fact that a man may be in the throes of angina pectoris, an alternating pulse may give evidence that the contractile power of the heart is impaired, he may even die of heart failure without any evidence of marked dilatation. On the other hand, we often find very considerable dilatation of the heart in individuals who give evidence of good contractile power by engaging in moderate physical work without undue distress.

Failure of contractility is seen in its most acute and typical

form in angina pectoris, which is defined by Sir Douglas Powell as "sudden paroxysmal disturbance of the heart's function accompanied by severe pain, disturbed breathing and a vague or instant apprehension of death". By excluding other likely causes, Sir James Mackenzie has satisfied himself that the most important element in the causation of an attack of angina pectoria is a failure of contractility. This in turn is most often due to starvation and degeneration of the heart muscle caused by narrowing of the coronary arteries or aortic disease. Angina pectoris is most common in the degenerative stage of life when sclerotic changes have had time to develop in the aorta and coronary arteries, but it is sometimes seen in younger patients suffering with organic disease of the heart, as a result of vaso-motor spasm, or from tea or tobacco poisoning.

Chronic failure of contractility is to be suspected when precordial pain or distress is felt on slight exertion, and is out of proportion to the other indications of heart disease. In these cases the pulse may be moderate in rate and of good volume, the heart may show little or no enlargement, there may be no valvular murmurs and no signs of congestion in the lungs, or systemic veins. In some cases we may detect an alternating pulse, which is always suggestive of failure of contractility. In other cases, we may have nothing to guide us except the distress caused by exertion, and perhaps some increase in arterial tension.

Before making a diagnosis we should consider other possible causes of precordial pain, such as pericarditis, aneurism, rheumatism, neuralgia, and hyperæsthesia of ovarian or nervous origin.

Chronic failure of contractility, like angina pectoris, is seen especially in cases of arteriosclerosis with starvation and degeneration of the heart muscle.

The treatment of failure of contractility is to be primarily directed, not to stimulating the heart muscle, as this is usually beyond our powers in these cases, but to relieving the heart of its work in every possible way. The means at our disposal for this purpose are many and we should employ them all so long as they do not conflict with one another. The first essential is rest, both physical and mental, to diminish the work of the body generally and the heart in particular. This is to be accomplished by rest in bed, if the symptoms are pronounced, and by exclusion of talkative and alarming friends. The patient must be separated as completely as possible from business worries and family troubles. Where rest is interfered with by pain or restlessness, these must

be relieved by morphine, chloral or bromide. In suitable doses, none of these drugs have as depressing an effect on the heart as lack of rest. In many cases some special position, such as leaning forward in bed, or even sitting up in a chair, may give the heart more freedom of action than recumbency. When pain is severe, and the heart is labouring against high arterial pressure, we may find in vaso-dilators like amyl-nitrite, a ready and helpful means of tiding over an emergency; but the long continued use of these drugs is to be deprecated, as their oft-repeated use is probably the opposite of beneficial to the heart and may cause undesirable changes in the blood.

It is important to relieve the heart from any undue pressure by surrounding organs. Pleural effusion should be removed at the earliest possible moment and within limits the same may be said of pericardial effusion. The bowels should be kept open and distension of the stomach prevented or relieved. This is to be accomplished in an emergency by giving a carminative, such as compound spirits of ether, aromatic spirits of ammonia and peppermint water equal parts, in doses of one or two teaspoonsful in water. No food should be given during an acute attack, and when the pain subsides, food should be chosen that will be of small volume and without gas forming properties. On the forbidden list should be especially all the new-fangled cereals, and even old-fashioned porridge, fresh bread, soups, and in some cases potatoes and other bulky vegetables. The safest foods are easily digestible solids, like boiled fish or chicken, baked custard and stale bread. Milk is well borne by some patients. Sugar is a good heart food and may be given as clarified honey or maple syrup.

As soon as possible the teeth should be put in perfect order and any deficiencies should be supplied by bridge work or plates. One of the greatest difficulties in these cases is that of supplying back lower teeth. Where expense is no object, it can usually be accomplished by a first-class dentist, and is well worth the trouble and expense. I do not know any measure more important in failing hearts than supplying good back teeth. The freedom from fermentation and gaseous distension, which usually follows, brings about a surprising improvement in the heart symptoms and may make all the difference, not only between comfort and discomfort, but even between life and death. The recent fad for pulling teeth as a cure-all is simply criminal.

As the symptoms subside, preparation must be made to regulate the life of the individual in the direction of avoiding all undue

effort. He must live on a low plane and may only be able to purchase a few months or years extension of life by giving up business and avoiding all excesses in food, worry and exercise, as well as in alcohol and tobacco. Where the patient can not, or will not, submit to these conditions, the outlook is poor and relapse may be expected.

In the acute stage of failure of contractility, digitalis is not likely to do good, and often does harm, but later on when the urgent symptoms have passed, it may be cautiously tried, and in a certain number of cases will be helpful. In many of these cases it probably does good by improving the circulation generally and especially that through the heart itself. We have the authority of many great writers of the past for recommending iodide of potash and arsenic in these conditions; but I have not used them enough to be able to recommend them from personal experience. Quite the contrary is the case with adrenalin. I have found it of the very greatest service in these cases, although most text-books say it is contra indicated in all cases accompanied by hypertension or arteriosclerosis. I believe that this drug is much maligned and grossly misrepresented. It has the reputation of raising the blood pressure whenever and however administered. The profession never laboured under a greater mistake. The raising of the blood pressure, which is so marked a result of a dose of adrenalin injected into a vein, is scarcely noticeable after hypodermic injection, and is usually quite absent when it it given by the mouth. I have given it to patients suffering with arteriosclerosis of the cardio-renal type and to the subjects of angina pectoris for months and years continuously, and in the majority of cases the blood pressure has become materially lower during its administration. This is probably to be explained by the fact that adrenalin increases the force of the heart beat and improves the circulation through the medullary centres; for it is a well-known fact that the better the circulation through the medulla, the less active is the vaso-motor centre. The ordinary solution of adrenalin chloride 1-1000, may be given hypodermically in doses of five or ten minims every two hours for a few days, and this may be followed up by fifteen or twenty minims by the mouth every two or three hours for weeks, or even years, as the case may require. Instead of adrenalin solution, suprarenal tablets may be given in doses of eight to ten daily.

As opportunity offers, one should do everything possible to improve the quality of the blood by hæmatinics like iron and arsenic, and by the addition of sugar to the diet in considerable

quantities. Before ordering sugar it is well to assure oneself that the patient has a good tolerance for it by testing the urine a few times, as it is not uncommon to find failure of contractility associated with diabetes.

Cardio-renal asthma is not a pure form of heart failure. It depends on a number of causes, some of which we do not fully understand. It presents many resemblances to cases of failure of contractility, and I think we are justified in holding that failure of contractility is at least a factor in most cases of cardio-renal asthma, or nocturnal dyspnœa. Like angina pectoris, it is seen in those suffering from arteriosclerosis and in the vast majority of cases the coronary arteries are involved. Pulsus alternans is sometimes present. Among the underlying causes of cardio-renal asthma is arteriosclerosis which puts increased strain on a weakened heart. Other factors are defective secretion of the kidneys with retention of acid sodium phosphate and other metabolic products, diminished alkalinity of the blood with reduced carrying power for carbonic acid, and limitation of the vital capacity or breathing power from effusion in the pleural cavities, congestion of the pulmonary vessels, or other causes.

The treatment of the attack is to be carried out in much the same way as for one of angina pectoris. A hypodermic injection of morphine is often the best medication. Relief usually comes with the morning, but the symptoms may return the next night. Between the attacks the treatment is essentially that of chronic nephritis, namely, limitation of animal food, warmth, and means to increase the activity of the skin and bowels. In addition, the heart is to be treated as nearly as possible as if the kidneys were normal. In other words, heart failure is to be treated by rest and heart tonics. It is now generally admitted that nephritis accompanied by hypertension is no contra indication for digitalis. On theoretical grounds it was once supposed that digitalis would still further raise the blood pressure and should be withheld. Practical experience shows the contrary to be the case. Where the heart needs digitalis, its administration is nearly always followed by a very distinct fall in blood pressure and very often by an improvement in the general condition of the patient. The members of the profession are mostly still at the stage of theory as regards the use of adrenalin preparations in cardio-renal cases and nearly every author that refers to the subject does so only to condemn the practice. If any one will only take the trouble to try adrenalin in a few cases I am sure he will be surprised at how often the blood

pressure will come down as the condition of the heart improves. There is some experimental evidence that increased suprarenal activity is one of nature's means of readjusting the metabolism in disease of the kidneys, and if so, adrenalin is indicated in renal inadequacy. I have given adrenalin freely in cases of hypertension where the systolic pressure was over 250 and in one case for as long as three years with great symptomatic improvement, and have found the blood pressure materially lowered far oftener than otherwise.

Failure of tonicity is more familiar under the name of dilatation of the heart. It is the most typical because the most generally recognized form of heart failure. Its presence is suggested by shortness of breath on exertion and especially by œdema of the legs.

The first stage in diagnosis is the recognition of cardiac enlargement by palpation, percussion, or *x*-rays; the second stage is the exclusion of pure hypertrophy and pericardial effusion by attention to the strength of the cardiac impulse, the character of the heart sounds, and the outline of the precordial dulness. Confirmatory evidence is furnished by diffuseness of the impulse, epigastric pulsation, accentuation of the pulmonary second, embryonic shortening and sharpening of the first sound, valvular murmurs, engorgement of the pulmonary and systemic circulation, and enlargement of the liver and spleen.

In treating failure of tonicity, the first consideration should be rest, which may be absolute or relative according to the extent of the condition. In moderately severe cases, three weeks' absolute rest in bed will be indicated and should be followed by a gradual return to activity. In more severe cases the patient may have to be kept in bed for months. Restful nights should be assured if necessary by the administration of sedatives. In acute cases with dilated right heart and engorged veins a venesection will sometimes save life, and is not practised as often as it should be. Drugs of the digitalis group are usually beneficial. When the patient is in imminent danger, strophanthin may be given intravenously or intramuscularly in does of one-fourth to one-half milligram and may be repeated in from three to twelve hours according to the indications. Strophanthone, which is marketed in ampoules ready for use, is an excellent preparation. It is well to go carefully with strophanthin till one has some experience with it. When a first dose does good, a second dose may do more good, or, if given too soon, may be followed by sudden death, as occurred once in the practice of the writer.

When the danger is less threatening, some form of digitalis may be given by the mouth. The ordinary tincture usually answers very well and may be given in doses of fifteen minims three times daily. Where this is ineffectual, doses considerable larger may be tried under careful oversight.

Some show better tolerance for some of the active principals, such as one finds in Nativelle's granules of digitalin. Good results have also been reported from the infusion made from the fresh leaves, the powder, and various proprietary preparations, such as digipuratum, digalen, and Petit Miahl's digitalin. The important matter is to choose the right case for the digitalis rather than the right digitalis for the case.

As a rule, digitalis should be given in good doses until the pulse slows down to sixty or seventy, or symptoms of intolerance show themselves. In the latter case it may be discontinued for a few days and then resumed in smaller doses. If it agrees well the dose may be gradually reduced but the administration of small daily doses may be kept up for months or years.

I do not know any cause of failure in the treatment of heart disease so common as the custom of discontinuing digitalis as soon as it begins to do good. The fact that it is cumulative in action is an indication for watching its effects and diminishing the dose as experience suggests, but not for stopping it altogether and allowing the symptoms of heart failure to return. The control of the heart by digitalis may be compared to the regulation of a watch by moving the little needle to and fro. In a somewhat similar way we move the dose of digitalis up and down, first coarsely and then with finer and finer adjustments, until we find the dose that makes the heart act with the greatest efficiency and economy. After a time we can prolong the intervals between examinations but should let the patients continue the drug indefinitely if there is any tendency to heart failure, as it will do much to increase their comfort and prolong their life.

The best dose for continued administration differs very much in different patients and each case must be worked out individually. Some will eventually require only one dose a day of ten minims of the tincture, while others will get along best on doses of fifteen or twenty minims three times a day, and will become seriously ill if it be discontinued for even a week or two. There is no danger in digitalis if the effects are watched. For years past I have had scores of patients taking their daily dose, month after month and year after year, and have never seen any serious results from it.

On the contrary, I have seen patients live in comfort and freedom from relapse, who without the continued use of digitalis, would have been frequently laid up in bed with circulatory failure, and in many cases would have passed into a state of advanced heart failure ending in death.

Patients with the absolutely irregular heart of auricular fibrillation usually do remarkably well on digitalis, but need to take it as long as they live. Those with failure of tonicity without arrhythmia are more uncertain in their response to digitalis, but often do well and may recover sufficiently to get along without it for a time.

Some indications for stopping digitalis are nausea, diarrhœa, dryness of the mouth, aphasia, drowsiness and partial heart block. So far as known to the writer no form of valvular disease is necessarily a contraindication to its use. On the other hand, valvular murmurs are not necessarily indications for treatment of any kind. Valvular murmurs are worthy of due consideration as they often suggest active infection or degeneration or overwork of the heart muscle. It is also important to differentiate the more serious valvular defects from those that put less strain on the heart muscle, as in the former case the prognosis is less favourable, and the need of prolonged rest more urgent. Chronic valvular defects are themselves beyond treatment as a rule, and are to be considered rather for the light they shed on the ætiological factors at work and because of the strain they are likely to throw on the all-important heart muscle.

Sometimes, unfortunately, drugs of the digitalis class are not well borne and have to be given up. These cases furnish the most difficult problems in connection with heart work. Where the intolerance is limited to the stomach, it may be possible to introduce digitalis by enema; where this also fails it is probable that the heart muscle is in a state of degeneration and the prognosis is bad. In a few of these cases suprarenal tablets in a dose of eight or ten two-grain tablets a day, may do good as in failure of contractility. The period of rest must be prolonged. Theobromine may be useful in cases where œdema is a prominent symptom, but in which the kidneys are fairly normal. Theobromine may be given in powders or konseals in doses of ten grains three times daily. Some cases of heart failure with dropsy do well on one daily dose of digitalis and two of theobromine, or vice versa. Hæmatinics, baths, and graduated exercises all have a place in selected cases.

Speaking broadly of the treatment of the two main types of heart failure, it may be said that in treating failure of contractility,

the all-important consideration is that of warding off a fatal issue by reducing the work of the heart to a minimum. The reserve power of the heart muscle is so diminished that it is not wise or safe to push it by direct stimulation until the critical stage has passed. In failure of tonicity, on the other hand, the heart has to some extent saved itself at the expense of its efficiency and although rest is very important, it is necessary to force the heart itself more or less from the very first. We are in fact often compelled to do so when death threatens from suppression of renal activity, or from the effects of congestion and œdema of other important organs.

To obtain the greatest possible success in the treatment of heart disease, it is not sufficient to treat the particular form of heart failure as outlined above but also to determine the underlying causes and to attack them by every means at our disposal. It has already been pointed out that while valvular lesions are not directly open to treatment themselves, they are well worth study for the light they throw upon the causes at work. Speaking somewhat broadly it may be said that a patient seldom if ever dies of valvular disease of the heart. He dies because the same infection that attacked the valves has also impaired the efficiency of the heart muscle so that it cannot do the extra work required.

As long as the heart muscle is perfectly healthy it can adjust itself to an enormous amount of extra work and can struggle along under almost any combination of valvular lesions. It is when the heart muscle is attacked by infection or weakened by the degeneration of old age that it becomes unable to meet the demands made upon it.

When the physical signs point to mitral stenosis or aortic regurgitation, we know that the work required of the heart muscle is considerably increased and that some day it will probably give out under the strain, especially as these lesions are seldom found without some accompanying infection of the heart muscle. In the presence of any valvular lesion we should ask ourselves to what extent the work of the heart is increased, and also to what extent the heart muscle is probably involved in the disease.

Where we have reason to suspect the presence of rheumatic infection, we should combat it by rest and salicylates and in obstinate cases by tonsillectomy or vaccine therapy. We should only give up the struggle when we have conquered the rheumatism or had to acknowledge defeat by the death of our patient. Similarly we should always be on the watch for syphilis and resort to the Wassermann test in doubtful cases. In the case of other infections,

the same principles should be followed. Careful diagnosis and specific treatment is necessary if we are to overcome the resulting heart disease or stop its progress. Where other causes are at work, such as obesity or nephritis, we must act in accordance with our general knowledge of disease.

One factor which often plays a part in the causation of heart failure forms an exception to the general rule, in that it is not always wise to attack it directly. I refer to hypertension. Arterial hypertension is often dependent upon conditions more or less obscure which render a high blood pressure essential to the continued life of the inidividual. In some cases where the heart is threatening to stop forever because it is labouring against a pressure which it cannot over come, we may give temporary relief by means of vasodilators, but as a general rule it is a mistake to treat hypertension in this direct way. If we improve the metabolism by regulating the food and exercise, or quiet the nerves by rest and bromides, or improve the general health in some other way, the blood pressure may fall; but to prescribe nitrites indiscriminately in high blood pressure is quite as stupid and dangerous as to give acetanilid tablets to everyone complaining of headache without knowing whether we are dealing with eye strain, uræmia or brain tumour.

The two great divisions of heart failure which we have so far considered, namely, failure of contractility and failure of tonicity, include most of the cases in which the tissue chiefly affected is the mature heart muscle.

In considering the pathological variations in other functions of the heart we will find ourselves dealing especially with affections of the primitive muscle which for the most part present themselves as various forms of arrhythima. It is not proposed to attempt an exhaustive dissertation on the varieties of arrhythmia as the technique of their exact diagnosis by the electrocardiogram or the venous pulse, cannot be properly discussed in a single address. It should be possible, however, to consider some of the underlying principles and to emphasize a few practical points that may be applied in every day practice.

The normal rhythm of the heart is dependent upon the rhythmic development of a contraction in the sino-auricular node. The wave of contraction spreads so rapidly over the two auricles that all parts of these chambers contract practically together. It passes down more slowly from auricles to ventricles so that there is an interval of a tenth or even a fifth of a second between the contractions of the upper and lower chambers. This delay in conduction

is explained by the fact that the rate of conduction through muscular tissue varies inversely as the width of the bridge through which it has to pass and the only bridge connecting auricles and ventricles is the slender auriculo-ventricular bundle.

It is convenient to consider the principal varieties of arrhythmia as affections respectively of stimulus production, conductivity and excitability. There are at least three clinical types of arrhythmia caused by abnormal stimulus production, effective stimuli being produced in situations other than their usual place of origin in the sino-auricular node. These three types are extra systole, auricular fibrillation, and auricular flutter.

All parts of the heart where there is primitive muscle tissue have at least potentially the property of developing contractions, but as a rule the development is too slow to take effect before a contraction wave descends from the node. An extra systole is a contraction which develops from a stimulus arising in some part of the auricles or ventricles and which matures soon enough to forestall the regular stimulus descending from the node. The resulting contraction is premature and also less effective than the regular normal contraction. It is recognized in the pulse as an intermission or as a weak premature beat followed by a long pause; in the heart, as a short, sharp first, or first and second sound, occurring after a shorter interval than normal. Extra systoles may come singly or in series. They are sometimes observed in people apparently healthy but are more common in the latter half of life. They are of little or no significance in themselves, but may well suggest a careful examination of the heart as they are sometimes an early sign of myocadritis. More frequently they can be traced to indigestion or some condition of nervous excitement.

Extra systoles comprise most of the cases usually described as intermittent pulse and a just estimate of their significance should banish for ever the grave expression with which doctors as well as nurses often announce that the pulse is intermittent. Under ordinary circumstances "an intermittent pulse" has just a little more significance than a wart on the neck. A man with a wart on his neck may have an internal cancer and a man with an extra systole may have myocarditis, but in each case the fact has to be proved by other indications. An exception may perhaps be made in cases of fever. Extra systoles if present usually disappear when the pulse rate rises in fever. Where they persist, or first appear with a high pulse rate they carry with them some suggestion of a degenerating or overburdened heart.

Auricular fibrillation is the most important variety of arrhythmia because it furnishes a more definite indication for treatment than does any other kind. It is recognized by the fact that the pulse is absolutely irregular and usually frequent in untreated cases. The heart sounds are irregular in rhythm and loudness. The more marked and extreme the irregularity the more likely is the case to be one of auricular fibrillation. By means of the electrocardiogram it has been shown in these cases that the auricles are contracting piecemeal and with very great frequency. There are hundreds of contraction stimuli arising in the auricles every minute which crowd one another over the auriculo-ventricular bundle taxing the conducting power of this slender bridge to the utmost and reaching the ventricles in numbers greater than it can respond to. The attempts made by the ventricle to do so result in the frequent irregular beat usually seen in cases of auricular fibrillation.

This form of irrregularity is seen in young subjects in the later stages of mitral stenosis but becomes more frequent as age advances. It is frequently seen as a late result of athletic overstrain and especially in connection with the myocardial degeneration of old age.

The condition is occasionally temporary but usually permanent when once well established. The undue frequency of the heart beats tends to exhaust the ventricles, especially as practically the whole work of the heart falls on these chambers. In untreated cases the tendency is to progressive heart failure. There are, however, few diseases in which intelligent management can do more to relieve disability and prolong life than in these cases of auricular fibrillation. It is here that rest and digitalis win their most brilliant victories. One reason why digitalis is so beneficial in these cases is that it has the property of reducing the conducting power of the auriculo-ventricular bundle so that the ventricles receive fewer stimuli and contract less frequently. By rest in bed and appropriate doses of digitalis, it is often possible in the course of a few weeks to reduce the rate of the ventricle from 150 or more down to 70 or 80 heart beats per minute and by the continued administration of small daily doses we can often keep the rate of the ventricles within reasonable limits for years. The irregularity persists to some extent and the functional capacity of the heart is necessarily reduced, but I have treated one case of auricular fibrillation for sixteen years before death ensued and during practically the whole of this time the patient earned a good living.

Auricular flutter is a condition bearing certain resemblances to

auricular fibrillation. In this disorder the auricles usually beat two hundred or more times a minute, but not piecemeal as in fibrillation. The response of the ventricles is very variable. The beat may be frequent or of moderate rate, and either regular or irregular. The condition is sometimes hard to recognize and is often overlooked. Flutter and fibrillation are easily confused and sometimes alternate with one another in the same patient. In the case of doubt it is best to have an electro-cardiogram taken as this is the only certain way of distinguishing these two conditions from one another. The treatment of flutter is to be carried out by rest and digitalis as in the case of fibrillation. Under treatment cases of flutter often pass through a stage of fibrillation and ultimately return to a normal rhythm.

Paroxysmal tachycardia is a general term for sudden attacks of frequent heart action which last for minutes, hours or days and then cease almost as suddenly as they begin. During the attack the pulse rate is very high and is often uncountable. It may be either regular or irregular. On analysis, cases of paroxysmal tachycardia may turn out to be due to extra systoles occurring in rapid succession, to auricular fibrillation or to auricular flutter. We are in the dark as to the essential cause of these attacks but in many cases emotional and reflex influences seem to play a part. In my own experience I have found them especially common in those suffering with visceroptosis. As paroxysmal tachycardia is a purely clinical term applied to a number of essentially different pathological conditions, it is not surprising that the response to treatment varies very much in different cases. Complete rest is usually advised and this is certainly a safe course to pursue, but in some cases reported the attack has been cut short by violent exercise and in others by mechanical stimulation of the pneumogastrics. The latter is effected by Valsalva's manœuvre of having the patient take a deep breath and exert strong expiratory pressure against a closed glottis or by direct pressure upon the nerve trunks in the neck.

In most cases benefit follows the use of digitalis or strophanthus. Of the two I think strophanthus is decidedly the more effective in these cases. Stropthanthin may be given intravenously or some preparation may be given by the mouth but always under careful supervision as with strophanthus the margin of safety between effective and dangerous dosing is not very great. Personally I have seen excellent results from tablets containing the equivalent of five minims of the tincture. Such tablets are listed by several

of the leading manufacturers. They may be given from two to four times daily. Sometimes benefit seems to follow the exhibition of nerve sedatives like chloral, bromide or morphine. An ice bag applied to the precordium is often recommended. Between attacks the general health must be attended to with special reference to the nervous, digestive, and sexual organs, and if the heart shows any signs of disease this must receive appropriate treatment.

Changes in the conductivity of the heart constitute the various forms of heart block in which there is interference with the passage of the contraction wave from auricle to ventricle or over the walls of the individual chambers. Time compels us to limit ourselves to-day to a consideration of those cases in which the conductivity from auricle to ventricle is interfered with as a result of disease of the auriculo-ventricular bundle or its immediate neighbourhood.

Cases present themselves showing three different degrees of auriculo-ventricular block:

1. Lengthened conduction time.
2. Partial heart block.
3. Complete heart block.

Exact diagnosis of any of these conditions is best made with the assistance of a venous pulse tracing or an electro-cardiogram showing the time relations between the systoles of the auricles and ventricles. In the absence of these instrumental aids, however, it is often possible to make a pretty shrewd guess as to the condition present.

Lengthened conduction time is to be looked for in any case where there is reason to expect extensive degeneration of the heart muscle. It sometimes betrays itself by the fact that the auricular contraction becomes audible as a third sound, faint in character and heard shortly before the normal first sound. It may also be suspected in any case where the administration of digitalis leads to marked arrhythmia—partial or complete heart block. Where lengthened conduction time is suspected it is well worth while having the necessary tests made to see if the suspicion is justified. This is not only for the sake of the evidence it may give of the presence of degeneration of the heart muscle or pressure on the auriculo-ventricular bundle, but also on account of the bearing that the findings may have on the wisdom of administering digitalis. Along with its many benefits, digitalis is said to have the untoward effect of slowing or inhibiting conduction in the heart muscle where this function is already below normal. For this reason it is usually

unwise to give drugs of the digitalis class where the conductivity of the heart shown signs of impairment.

Partial heart block presents itself as true intermittence of the pulse and heart beat as distinguished from the pseudo-intermittence of extra systoles. In partial heart block a beat is missing from the pulse from time to time, and there is at the same time an absence of heart sounds showing that the ventricle fails to contract.

The degree of impairment varies greatly in partial heart block. An occasional beat may be missed or one in six or one in two. The irregularity in the pulse differs from that of extra systoles in that it may become more pronounced when the pulse becomes frequent, whereas under similar circumstances extra systoles tend to disappear. In some cases the interval between pulse beats in a true intermission is not exactly twice the interval between normal beats but a little shorter. The reason for this cannot be discussed here but the effect is to produce a rather puzzling form of irregularity which may be mistaken by the unwary for auricular fibrillation. In partial heart block, however, the heart sounds are more alike in loudness and pitch and there are usually periods in which the beats are regular. By these indications it is usually possible to distinguish it from fibrillation without recourse to graphic methods.

Complete heart block is characterized by a complete severance of relations between auricles and ventricles. The auricles may beat anywhere from sixty to three hundred times a minute and the ventricles from five to ten up to forty or fifty. The usual ventricular rate is between twenty-five and thirty-five. A ventricular rate below forty is strongly suggestive of complete heart block. Confirmation of the existence of heart block is afforded by the recognition of faint sounds in the heart between the ventricular beats. These faint sounds are to be ascribed to contractions of the auricles.

In most cases of complete heart block there is a history of brief attacks of unconsciousness which often bear quite a resemblance to mild epileptic fits being preceded by aura and accompanied by twitching of one or more groups of muscle. They occur most frequently when a partial heart block is changing to complete heart block and there may be as many as fifty or one hundred attacks in twenty-four hours. When complete heart block is fully established, they become less frequent or entirely cease. All forms of heart block are dependent upon functional impairment of the primitive muscle of the heart, especially that forming the

auriculo-ventricular bundle. The impairment of the muscle may be caused by some form of degeneration, by destruction of the bundle by ulceration, or by the pressure of a tumour. The cases most frequently cured are those caused by syphilis and every case should be carefully investigated for any indication of this disease. In fact even in the absence of any proof of syphilis being present, a course of antisyphilitic treatment should be tried as it affords practically the only hope of cure.

Where heart block cannot be cured it does not follow that speedy dissolution will take place, as cases even of complete heart block have been known to live for many years. Before expressing an opinion on prognosis, attention should be paid to any indications of failure affecting the other functions of the heart, notably the contractility and tonicity. Where there are not very definite indications of heart failure outside the affection of conduction a reasonable hope may be expressed that with great care the patient may live for at least a few years.

Changes in the excitability of the heart and disturbances affecting the function of stimulus production are in the present state of our knowledge not easy to separate from one another. As far as I know there is no accepted standard for allotting cases of arrhythmia to one or other of these categories. While we are waiting for further advances in knowledge it is convenient to consider under the head of changes in excitability certain groups of cases in which the heart seems more than usually affected by influences reaching it from other parts of the body.

Without much pretence of scientific accuracy we would include among these disturbances of excitability those cases which are characterized by an undue increase in the frequency or force of the heart beat from slight causes. In some of these cases the heart's action is perturbed for long periods of time; in others the disturbance occurs in the form of attacks of palpitation or tachycardia interrupting at more or less frequent intervals a normal heart rhythm.

Among the signs found are frequent pulse, diffuse apex beat, epigastric pulsation, throbbing of the vessels of the neck, and cardiac dilatation the result of fatigue.

The causes include physical and mechanical influences, like athletic overstrain, distended stomach, visceroptosis; chemical poisons from without, such as alcohol, tobacco, tea and coffee; metabolic poisons formed within the body to excess or not properly gotten rid of, as seen in disorders of some of the internal secretions;

constitutional conditions like anæmia, rapid growth, exhausting diseases. Sexual causes include various forms of excess and suppression, while emotional and mental causes are exemplified by loneliness, grief, worry and fear.

Success in treatment depends on the recognition of the causes at work, and these are often multiple. A patient with an excitable heart, for instance, may present visceroptosis which calls for a suitable belt, worry and insomnia calling for bromides, and perhaps a general spirit of restlessness expressing itself in multitudinous activities, charitable and otherwise, requiring general regulation of the life before relief can be obtained. Among drugs, belladonna and bromide, singly or in combination, are the most useful. Malt preparations often prevent flatulence and give the heart more room. The same end can often be attained by the replacement of missing teeth and the results are more permanent. Ovarian extract is often of benefit in cases occurring about the time of the menopause. In short, each case must be studied as a new problem, and treated according to the factors at work.

No matter what form of heart disease or disorder we have to treat, whether the standard authorities would classify it as organic or functional, we must remember that we have to deal with a living, active tissue, the heart muscle. The conception of pathology which gives the most prominent place to functional conditions, can be applied to treatment with the happiest results. Such a conception not only simplifies diagnosis but it leads to correct therapeutic measures more directly than does the old structural conception of pathology. This does not imply that one must adopt a narrow point of view. No knowledge that one possesses need be wasted. A good knowledge of diagnosis is of inestimable value in helping one to trace disorders of the heart to their respective causes and as far as may be, to eliminate the continued operation of these causes. Let us by all means find out all we can about the valves and pericardium. Let us estimate the size of the heart as accurately as possible. Let us study the changes brought about in other organs by the disordered circulation. Let us differentiate between the various infections as our knowledge of bacteriology will permit. Let us give due weight to any evidence of disordered internal secretions. Let us do all this and prepare ourselves to do it better as the years roll on, but let us never forget that the heart is first and last a muscle, and that the real problem of heart disease is to so increase the functional capacity of that muscle or reduce the work it has to do that a proper factor of safety may be re-established and harmony reign once more.

THE USE OF A VACCINE IN THE RECENT EPIDEMIC OF INFLUENZA

By Major F. T. Cadham, C.A.M.C.

Winnipeg

IT was in the first week of October, 1918, that cases of the pandemic influenza occurred in Winnipeg; that is, the first cases occurred that were recognized as typical of the disease. The epidemic progressed rapidly, reaching its peak in the second week in November, and from that date slowly, but gradually, subsided.

With the knowledge that the disease was to reach us, methods were considered of combating it. The information, which could be derived at the time, was meagre. Quarantine and isolation methods appeared uncertain in their effect, and the value of prophylactic methods was not established. It seemed, however, to be an outstanding feature that infections of the respiratory tract were coincident with the disease and accounted largely for the mortality.

With the knowledge of this, it was considered advisable to use a vaccine as prepared from micro-organisms infecting the respiratory tract of those suffering from the disease.

The vaccine was to be used as a prophylactic to raise the immunity of those inoculated against respiratory infection.

Bacteriology

Naso-pharyngeal swabs were taken from one hundred and twenty-eight cases at different stages of the disease. Direct smears were made and stained, and cultures were made on hæmoglobin-agar and the following were the predominant bacteria found:

Streptococcus, 106; pneumococcus, 18; bacillus influenzæ, 23; Freidlander's bacillus, 6; staphylococcus, 24.

Sputum. Smears made from the sputum of eighteen cases showed a gram positive diplostreptococcus in sixteen. Cultures from sputum, taken from six patients suffering from pneumonia, showed in five, a diplostreptococcus, and in one a streptococcus and pneumococcus. Free expectoration, in the cases of pneumonia that developed in the military, was uncommon.

Empyema. Examination of the pus from five cases of empyema showed in four, streptococcus, and in the fifth, a streptococcus and a pneumococcus.

Blood Cultures. Positive findings were obtained in four out of twenty-two blood cultures. These four showed a characteristic diplostreptococcus; two of these positive cases were in the acute stages, one was a case complicated by pneumonia, and in one the culture was positive ten days after the acute sysmptoms had subsided. This patient had developed a phlebitis in the leg. The blood was collected in a vacuum tube with a culture media of 1 per cent. glucose bouillon to which had been added 2 per cent. sterile sheep's serum.

Post Mortem. A streptococcus was found in the lungs and blood of one case and a pneumococcus and staphylococcus in the lungs of another.

Fæces. In the examination of the fæces of eight cases a diplostreptococcus similar to that found in the pharynx, was isolated in four.

Streptococcus. In August, previous to the outbreak, of recognized cases of influenza, there had occurred at the Tuxedo Military Hospital two cases of pneumonia, followed by empyema. I now believe, from a study of their history, these cases to have been originally influenza. At the time a pure culture of streptococcus was obtained fron the pus of both these cases. A small amount of vaccine was made from this culture and four of the members of my laboratory staff were inoculated. Examination in two of those inoculated showed increased opsonic index for this streptococcus. This increased opsonic index persisted for four months in one case in which the examinations were continued.

The predominant micro-organism thus found has been a streptococcus or diplostreptococcus. This is a gram positive streptococcus appearing in either short or long chains. It is pleomorphic. The same micro-organism will appear at different intervals of cultivation as either a streptococcus or diplostreptococcus. No capsule was demonstrated. It is hæmolytic on first cultivation, but loses this power on sub-cultivation. Cultivated for some days in serum glucose bouillon it assumes a lanceolate shape. It forms discreet colonies on hæmoglobin-agar and confluent colonies on agar to which the blood had been added at 80°C. Grown in serum glucose bouillon it forms a diffuse cloud. It coagulates litmus milk with acid formation in seventy-two hours

and ferments lactose. It does not ferment inulin. The agglutination re-action with types 1, 2, and 3, anti-pneumococci serums was negative.

Preparation of the Vaccine

For the use in members of the Canadian Expeditionary Force, vaccine was prepared as follows: The strain of streptococcus obtained from an empyema that occurred in August was added to two strains of streptococci obtained from the naso-pharynx of soldiers who arrived from the East suffering from the disease on October 1st, 1918. From time to time strains of streptococci were added; these were taken from the naso-pharynx and one strain from blood culture and one from the lungs post mortem. One strain from the pharynx gave cultural characteristics of the streptococcus viridans.

The streptococci were grown in 1 per cent. glucose bouillon to which 2 per cent. of laked sterile sheep's blood had been added.

Strains of pneumococci were obtained from the naso-pharynx and sputum of the cases at the time and grown in similar media. A strain corresponding to type number 3 was not obtained.

After eighteen hours incubation the cultures were centrifuged in deep tubes at a high rate of speed for half an hour. The supernatant fluid was poured off and the bacterial deposit of the tubes was diluted with normal saline and pooled. A dilution was made of the streptococci to give 1,800 million per c.c., and dilution of the pneumococci to give 900 million per c.c., as by hæmocytometer count.

The influenza bacillus, obtained from the naso-pharynx of the first cases to arrive, was used. It was grown in flasks of solid media. Hæmoglobin agar was made by adding 20 c.c. of sterile sheep's blood to one liter of agar at a temperature of 80°C. This did not made a sightly media, but the influenza bacillus grew freely on it. The flasks were incubated two days before using to test sterility. The culture was carried in Lœffler's blood serum tubes to which had been added 2 c.c. of serum glucose bouillon, the contents of one tube sufficed to seed a flask. Cultivation was carried out for twenty-four hours at 37.5°C. The growth was washed off with normal saline and filtered through a sterile gauze. It was centrifuged and the bacterial deposit pooled and diluted with a normal saline solution to give a count of 1,200 million per c.c. This was judged by the turbidity of a standard suspension.

The saline suspensions of the streptococci, pneumococci, and influenza bacillus were mixed in equal parts and 2 per cent. trikresol added. After bottling in rubber-capped, sterile bottles, the vaccine was sterilized for a half hour at 60°C. Sterility was tested by inoculation of media and guinea pigs.

The dose was ½ c.c., containing approximately 300 million streptococci, 200 million influenza bacilli and 150 million pneumococci. Preliminary inoculations were carried out on the staff of the laboratory to determine size and interval of doses.

Inoculations

With the permission of Major-General J. T. Fotheringham, C.M.G., Director-General of Medical Services, the soldiers of the district were inoculated under the direction of Col. Webster, D.S.O., Assistant-Director Medical Services, Military District No. 10. The inoculation was voluntary.

The first inoculations were given on October 20th, 1918, and a second inoculation seven days later. There were some 7,600 soldiers in the district at the time and 4,842 were inoculated. In anticipation of an outbreak there had been established by the A.D.M.S. a special military hospital for the purpose of receiving such influenza cases as might develop. This hospital was under the charge of Captain D. A. Macdonald.

From October 1st, 1918, to February 28th, 1919, five hundred and twenty soldiers were admitted to this hospital suffering from the disease.

Clinical Diagnosis

The onset was, as a rule, sudden. The soldiers complained of general depression. In all the cases there was an initial chill or chilly sensations. Pains in the back and legs were common and more severe on the second day. Headache was a direct initial symptom, especially so in the later stages of the epidemic. Sore throat was a common complaint. The throat was dry and congested. A dusky appearance of the face and congestion of the conjunctiva were common. Some cases exhibited a coryza. A loose cough developed with the disease. Nose bleed occurred in about one-third of the cases. In all cases the temperature rose rapidly to at least 101°. Pulse rate was from 90 to 120.

Statistics of the Hospital

Of the five hundred and twenty cases admitted, two hundred and eighty-two had been inoculated with the vaccine and two hundred and thirty-eight were uninoculated. There was a total of fifty-eight cases of pneumonia and twenty-two deaths. Among two hundred and eighty-two inoculated seventeen developed pneumonia and five died. Of the five that died, three had received their first inoculation on the day they were admitted to the hospital. One developed the disease three days subsequent to the first inoculation and one ten days subsequent. The latter soldier was suffering from tubercular glands of the neck.

No soldier died who had been admitted subsequent to his second inoculation.

Among the two hundred and thirty-eight admitted who had not been inoculated with the vaccine there occurred forty cases of pneumonia and seventeen deaths.

Table I.—Report of Military Hospital for Influenza

	Admissions	Pneumonia	Per cent.	Deaths	Per cent.
Inoculated....	282	17	6·05	5*	1·7
Uninoculated..	238	41	17·1	17	7·1

* Of these five, three received their first inoculation on day of admission.

Captain D. A. Macdonald states that the disease and complications were not so severe in the inoculated. The average stay in the hospital of a patient was twice as long for the uninoculated as for the inoculated.

The cases came from the troops in the district except for forty cases which were taken from troop trains passing through Winnipeg. The troops were quartered in barracks throughout the city, in military hospitals and some at their homes. Cases developed in all quarters.

The inoculations were carried out two weeks previous to the peak of the epidemic in the city. The incidence of admissions into the hospital followed closely the curve of the epidemic in the city.

Conditions of exposure were practically the same in all the barracks and were no different for the inoculated and the uninoculated, except in the forty cases who developed the disease on

troop trains. Both the inoculated and uninoculated were admitted to the hospital at all stages of the epidemic.

A quarantine was placed on the barracks following the placing of a ban on public gatherings in the city. As the business of the district required to be carried on, absolute quarantine was not considered. Cases developed in all barracks and the military hospitals irrespective of the quarantine. The quarantine was lifted a week before Christmas and the men allowed leave. They scattered through all the infected districts of the city and province, with no increase in the incidence of influenza among them.

Inoculations in the Civilian Population

Under the direction of Dr. Gordon Bell, chairman of the Manitoba Provincial Board of Health, there was prepared in the same laboratory 600,000 doses of vaccine for the use of civilian practitioners. This was supplemented by 100,000 doses prepared by Dr. Boyd, pathologist of the Winnipeg General Hospital. The vaccine was distributed to physicians of Winnipeg and throughout the West.

Approximately one quarter of this vaccine was prepared as before stated, the balance contained strains of bacteria as obtained from Dr. E. C. Rosenow, of Rochester. The dose of this vaccine was $\frac{1}{2}$ c.c., containing approximately 300 million pneumococci, 200 million influenza bacilli and 150 million streptococci. A second dose was advised.

Reports were received from one hundred and eight physicians at various points in Manitoba and Saskatchewan. These reports are summarized in Tables II and III.

Table II.—Incidence on Disease and Mortality in the Inoculated

	Once	Twice	Total
Number of persons inoculated	28,815	24,184	52,999

Incidence of	After first Inoculation	Per cent.	After second Inoculation	Per cent.	Total	Per cent.
Influenza	2,843	9·8	2,360	9·7	5,203	9·8
Pneumonia	177	·61	123	·50	300	·56
Deaths	61	·21	24	·09	85	·16

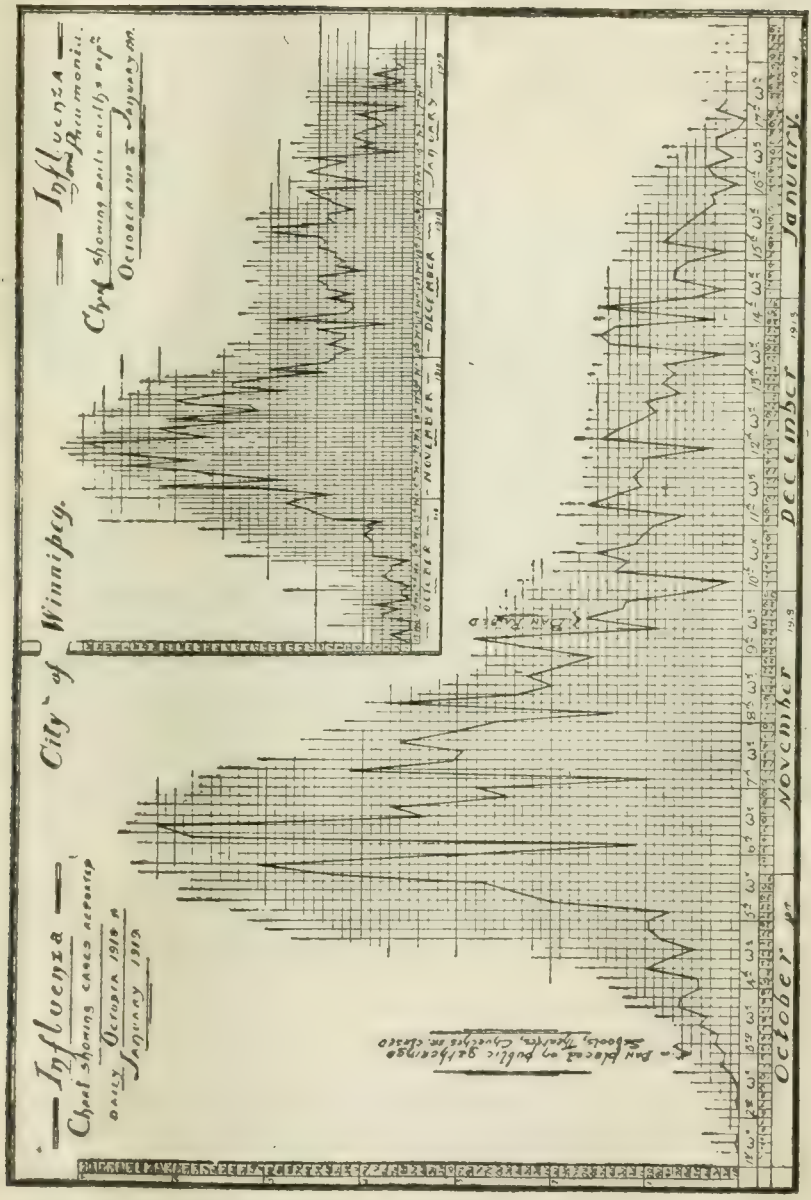
Influenza
City of Winnipeg.
Chart showing cases reported
daily October 1918 to January 1919
Influenza
Chart showing daily deaths reported
October 1st to January 1st
October
November
December
January

TABLE III.—INCIDENCE OF DISEASE AND MORTALITY IN THE UNINOCULATED

Number of uninoculated in clientele of physicians reporting 85,941.

		Per cent.
Influenza	21,285	24·8
Pneumonia	1,869	2·2
Deaths	563	·66

To the question "Do attacks of influenza appear to be modified if contracted following one or more injections of the vaccine?" One hundred and one physicians of one hundred and eight reporting replied in the affirmative.

There was no definite report of the vaccine being valuable in the treatment of influenza or pneumonia.

In reply to the question "Since influenza and pneumonia have been fatal in such large percentage of pregnant women has vaccine apparently afforded protection?" Thirty-two out of thirty-seven physicians answering this question answered in the affirmative.

The majority of these inoculations were given in the earlier stages of the epidemic, but no attempt was made to keep accurate statistics on this point. The ages of those inoculated were not obtained. Due to the exigency of war the profession was depleted and all branches were forced to work under a great strain; also the people were nervous, so that it was difficult to obtain full statistics or to divide any portion of the population in two parts for the purpose of running controls.

These records, as indicated in Tables II and III, show that the incidence of pneumonia was about four times as great and the mortality rate was four times as great in the uninoculated as in the inoculated.

COMMENT

It is a difficult matter to estimate the value of prophylactic vaccine as used in this epidemic of so-called influenza. Bacteriological findings show that the kinds and strains of bacteria, found complicating the disease, vary in different districts, and even at different stages of the epidemic in the same district. The disease is known to vary in severity in localities not widely separated

geographically, and during different stages of the epidemic in the same localities, so that in estimating the value of a vaccine these facts should receive careful consideration.

I believe the vaccine used as a prophylactic for the members of the Canadian Expeditionary Force of this district to have been of value. The incidence of pneumonia was less than one half and the mortality rate less than one fourth in the inoculated as compared with the uninoculated, admitted to the Special Military Hospital under similar conditions. The mortality rate for the city for the period of time under consideration was 6·28 per thousand; 53·6 per cent. males and 75 per cent. of these were at the age known as "military age". The mortality rate of the soldiers in the city for the same period of time was 2·5 per thousand.

The statistics obtained from the physicians as to the use of the vaccine in civil practice appear favourable.

THE London County Council, England, has decided to establish a number of schools for tuberculous children. Four years ago it was estimated in London 1,000 children were excluded from the elementary schools on account of tuberculosis. A sub-committee gave the number of children definitely notified as tuberculous as approximately 2,000, and, in addition to these, 2,000 other children required open-air education owing to anæmia, debility, or incipient tuberculosis. It is proposed to establish twenty day schools, each accommodating 100 children for the definitely tuberculous. The schools will be provided in the outlying parts of London, preferably in large private houses with grounds of fair dimensions (though some disused army huts may be adapted for the purpose), and near a tram route. For the 2,000 other children not notified as tuberculous, but needing open-air treatment, eight open-air schools are to be provided, in addition to the two already in existence. Admission to both classes of schools will be restricted to children who have been certified by the school medical officer. The capital cost of the whole scheme will be about £108,000, with £58,000 a year for additional maintenance.

PROTEIN MILK POWDER*

ALAN BROWN, M.B.

AND

IDA F. MACLACHLAN, B.A.

MUCH has been written concerning protein milk in pediatric literature, till now scarcely an institution dealing with children in America would be without its use, yet in spite of its widespread employment among pediatricians, it still remains almost unknown to the general practitioner.

For many years, physicians working on the problem of artificial nourishment of infants have endeavoured to ascertain the reason for the difference in tolerance for cow's and mother's milk. All the constituents of the milk have been blamed at various times for the bad results, and it is probably true that the misfeeding of any one element may cause trouble.

Chemically speaking, cow's milk and mother's milk are not unlike; to be sure, the protein of cow's milk is higher and is coagulated in coarser curds in the stomach. The next most striking difference is in the salt content, or the whey; mother's milk having 0·2 per cent., while cow's milk has 0·7 per cent.

Finkelstein of Berlin, who initiated protein milk to the profession, tried a unique experiment. He fed a series of infants on cow's milk casein, and mother's milk whey, and found that the infants thrived as though they were taking mother's milk. In another series he fed cow's milk whey and mother's milk casein and found that these babies were subject to the same troubles as though they had been fed plain milk and water mixtures. From these observations he concluded that most of the trouble in the artificial nourishment of infants lay in the whey, or, more properly speaking, the whey concentration with a secondary pathologic fermentation of carbohydrates and fat.

A few years ago it was the general idea that all of the acute gastro-intestinal upsets were due to infection of the gut tract, and whereas this is true in a small percentage of cases, it has been

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*From the wards and laboratories of the Hospital for Sick Children, Toronto.

proven that most of these cases are primarily due to intestinal cell harm caused by whey concentration with an overstepping of food tolerance.

We do not now look as much as formerly for the kind of flora of the intestinal tract, but instead we determine the variety of bacteria by the food that is given. This at first glance appears queer, but it is nevertheless true. The frequent, acid, green, explosive stools are the fermentative stools caused by the whey or carbohydrate concentration with the fermentative bacteria acting on the carbohydrates and fats. These saccharolytic bacteria produce irritative fatty acids with increased peristalsis and mucus. This type of stool wastes the sodium and potassium salts with consequent demineralization and relative acidosis which adds to the toxæmia. There is also a large water loss depending on the type of child and previous feeding.

A child can be rated as a good or bad child, depending upon its water-binding power or its water stability. Thus a child which has been fed on a poorly balanced high carbohydrate mixture such as is present in all patent foods, may lose one third of its weight in two or three days, while another child having the same disturbance may lose slightly or not at all. Thus the child's water binding power has a great deal to do with the prognosis and treatment. In the administration of protein milk with its large protein content, by adding to it sugar which is not easily fermented (dextri-maltose), we produce, instead of pathologic fermentation, a condition of putrefaction which changes the acidity of the intestinal contents to alkalinity, the peristalsis is decreased, the intestinal contents pass slowly through the large intestines with absorption of fluid and excretion of calcium and magnesium salts. These minerals unite with fatty acids to form the typical fat-soap-clay-coloured constipated stools characteristic of protein milk feeding, and it is at this point that dextri-maltose should be added to the food. In these stools the potassium and sodium and water loss is stopped, but the calcium and magnesium retention is lowered; however, this does not mean a negative balance, because of the increased salt ingestion.

Indications for the Employment of Protein Milk

In severe cases of diarrhœa which do not respond to the elimination of carbohydrate in the usual milk mixtures, protein milk is indicated, as in practically all cases of intoxication and infectious diarrhœa and many cases of dyspepsia in breast-fed infants. We

have also found it most useful in chronic intestinal indigestion in older children. Last but not least, is its employment most essential in the preliminary corrective stage of atrophy or marasmus.

Duration of Administration

The length of time that protein milk should be continued depends primarily on the digestive condition and secondarily on this factor plus the gain or loss in weight. If at the end of two or three days on protein milk there is no improvement in the number or character of the stools, with even slight gain in weight, no addition is made to the diet until the stools assume the appearance characteristic of a pure protein milk diet. This will come about usually in four to eight days and the stools then are quite regular, one or two daily, very large, light yellow, of the consistency of putty, rather dry, without odour and are free from any unmixed particles or mucus. If on the other hand, in the first few days there is loss of weight—and this is more frequently met with than gain—on the first appearance of betterment in the digestive condition, additions to the protein milk are begun.

The corrective period naturally divides itself into three stages:

1. That in which the protein milk alone is given.
2. That in which the protein milk plus dextri-maltose or barley flour is given.
3. That in which the protein milk plus a small amount of plain milk dilutions is given.

The majority of the cases were kept on protein milk for a period varying from three to four weeks, and, in many instances, contrary to the usual opinion, we were able to keep the children on protein milk plus starch and dextri-maltose, sufficient for their caloric needs for a period of several months, in each instance accompanied by a substantial gain in weight and normal increase in vigour and tissue turgor with comparative freedom from digestive symptoms. There was usually experienced little difficulty in weaning to an appropriate milk mixture, and only in rare instances was it necessary to return to the previous protein milk feeding.

The usual duration of the first stage was from six to eight days. In exceptional instances it being impossible to add carbohydrates before the third week.

As soon as the digestive condition showed some improvement, the first step towards increasing the food value was made by the addition of malt sugar in the form of dextri-maltose. This should

be added gradually to the day's supply of food beginning with one teaspoon and increasing to one and a half to two and a half ounces. Occasionally, when the carbohydrate tolerance was extremely low, cooked barley flour was added gradually up to one and a half ounces, as this appeared to exert a less laxative action. The caloric value of both these food elements being respectively one hundred and twenty and one hundred calories to the ounce, it was thus possible to fill soon the infant's needs by these additions.

The average duration of the second part of the corrective stage varies from two to four weeks and in many instances for as long as eight months. Those that were kept on protein milk plus carbohydrate for any considerable period showed a consistent increase in weight. It was found that the addition of milk and water mixtures could be made either gradually or suddenly, and rarely was it necessary to return to the original protein milk feeding. In many cases protein milk was used in conjunction with the breast milk feeding.

Preparation of Protein Milk

Method—(32-ounce quart of milk used in this formula)

A quart of certified raw milk is taken; two teaspoonfuls of essence of pepsin are added. Warm mixture to 140° F.; keep at this temperature ten minutes, as too great heat will cause the curd to become tough. Then let it stand at room temperature for half an hour. The curd is then separated from the whey and placed in a cheese-cloth bag and allowed to drip in the refrigerator over-night. The curd is then worked through a fine sieve (thirty-six wires to the inch) at the same time adding one pint of a low acid buttermilk and one pint of water, or water to make to one quart. To every quart of finished protein milk add one grain of saccharin.

The buttermilk used is made from fat-free milk.

When using, the feeding must be warmed only slightly so as not to curdle the milk.

Precautions to be Observed in Making Protein Milk

1. (*a*) Fat content of protein milk would be reduced by churning some of it into butter. To prevent this, all ingredients, curd, buttermilk and water should be absolutely cold when being worked through the sieve. A warm temperature would help in the separation of cream into milk and butter.

(*b*) The masher should not be worked with a rotary motion.

Pressure should be used each time to get the curd through, with the minimum amount of churning of the milk.

2. (*a*) As the curd is being put through the sieve it must be kept dripping wet with the buttermilk and water. If pressed through fairly dry, it clots on the underside of the sieve. These clots of fine curd never become evenly distributed through the milk except by putting again through the sieve.

(*b*) If more liquid is required to keep the curd wet than the necessary proportion of buttermilk and water, some of the protein milk already sieved may be used again.

This seems a long, difficult, unnecessary procedure, and many modifications have been tried, always with more or less failure, so it would seem advisable to adhere rigidly to the directions set forth. The technique has only been adopted after four years careful experimentation with various procedures.

The great disadvantages of the liquid product may be briefly summed up as follows:

1. Its difficulty in preparation.
2. Its perishable nature.
3. To a lesser extent the trouble experienced in feeding it to infants.

These difficulties almost wholly exclude it from being generally employed by physicians, thus greatly reducing the number of infants that might be materially benefited by its use. It was with the intention of overcoming these difficulties that we thought of manufacturing it in powder form. Many obstacles arose and considerable experimentation was done before we were able to obtain a uniform and satisfactory product which conformed to the analysis of the liquid preparation.

TABLE OF MILK ANALYSES "PROTIEN B"

MADE FROM 4 PER CENT. MILK

Sample Number	Date 1916	Moisture %	Ash %	Protein N x 6.25%	Sugar %	Fat %
	June	93·80	0·51	2·94	1·69	1·80
76	12	93·46	0·50	2·98	1·61	1·78
77	13	95·69	0·44	3·16	1·54	1·20
		95·39	0·48	3·09	1·54	1·15
78	14	93·55	0·57	3·08	1·73	1·45
		93.44	0·57	3·10	1·78	1·46
79	15	94·29	0·54	3·05	1·80	1·31
		94·07	0·54	3·13	1·78	1·30
80	16	93·55	0·60	3·16	1·57	1·49
		93·59	0·58	3·33	1·57	1·54
81	17	92·36	0·59	3·51	1·33	2·05
		92·89	0·60	3·44	1·35	2·06
82	18	93·96	0·63	3·47	1·65	1·96
		92·89	0·61	3·42	1·61	1·91
83	19	94·65	0·51	2·75	1·61	1·72
		94·73	0·48	2·69	1·57	1·71
84	20	....	....	3·21	1·54	1·41
		....	....	3·01	1·50	1·26
85	21	....	....	3·40	1·63	1·68
		....	....	3·35	1·65	1·59
Average.....		93·96	0·55	3·16	1·60	1·59

We have in this mixture a high protein food with a finely divided curd and a moderately high fat content. The whey is the whey of buttermilk or is the mixture diluted one-half, in this manner making the total salt content slightly less than cow's milk. The milk sugar, which is the carbohydrate of milk, is very much reduced, making it possible to add the less fermentable mixture dextri-maltose as the carbhoydrate. It is important to bear in mind that a low acid buttermilk or lactic acid milk is employed, preferably with an acidity not greater than ·36.

According to Courtney and Fales, the total salts of the ash are greatly in excess of those of mother's milk. The amount of calcium is nearly five times and the phosphorus nearly seven times as great. The soluble salts also are nearly twice as abundant in protein milk. To this large excess of insoluble salts, especially calcium, is no doubt to be ascribed the value of protein milk in producing formed stools. From Courtney and Fales' observations there is no basis for the statement that protein milk is low in salts and this is certainly confirmed by our own analyses. In fact, the total ash content is higher than is ordinarily fed to infants, even when protein milk is diluted, the amounts are much greater than nursing infants receive.

The average composition is:—Fat 1.6 per cent.; sugar 1·6 per cent.; protein 3·16 per cent.; ash 0·55 per cent.; giving a caloric value of ten to the ounce. It would thus require half an ounce of dextri-maltose to twenty ounces of protein milk to raise the sugar content to 3·5 per cent.

Technique of Administration

Children usually take this milk readily, the only difficulty being encountered when it is given to children over a year, when, in order to get them to take the mixture, it is essential to starve them; in exceptional instances, it should be given with a stomach tube. The milk should not be heated too rapidly nor above 90° F. otherwise tough masses of casein are likely to form. A large hole in the nipple is necessary and the feeding should be interrupted and the bottle thoroughly shaken every one or two minutes in order to keep the casein from settling to the dependent part of the bottle while the fluid portion alone is being consumed.

On account of the limited use of protein milk because of the present method of preparation, we deemed it wise to prepare, by a standard method, the food in a powdered form. Through co-operation with the Canada Milk Products Company, we have been able to prepare it in the following manner. The various ingredients consisting of pasteurized fat free milk, casein, cream, lactic acid starter are mixed in the proper proportions in an enamel lined tank equipped with a propeller. This mixture is then rapidly dried by spraying through a jet of hot air. The preparation is thus instantly transformed into a powder having a moisture of less than two per cent. At no point in the process does the temperature rise beyond that of pasteurization,

except during the period of removal of the moisture which requires only the fraction of a second.

Altogether fourteen batches have been prepared, each batch carefully analyzed and clinical observations made on batches one and two. One of our great difficulties was to obtain a proper acidity with a low lactose content.

It will be seen from the tables that batches one and two conform most uniformly to what is required. The only objection being that the lactose content is twice that of the original liquid preparation. From a clinical standpoint this increase has apparently offered no serious objections. In the accompanying table depicting the acidity it will be observed that the acidity of the powder is a little more than one-half that of the liquid preparation. This, too, has given no serious objection clinically as far as observations have been carried.

The preparation of an ideal powder has presented more difficulties than we expected, and we are still working to obtain a product as nearly perfect and stable as possible from every point of view.

The final product will approximate the analyses shown in table 2, batches one and two with the sugar possibly a little lower. A uniform product can be made with the acidity about 3·3 per cent. The powder, when mixed, will look like milk and usually does not settle for at least twenty-four hours; if, however, it does, it will readily mix with slight agitation.

PROTEIN MILK POWDERS

Average of Two Determinations

	1 2-10-18	2 2-10-18	3 2-10-18	4 9-10-18
Moist..	1·39	0·87	2·07	1·76
Ash....	6·28	6·20	7·29	4·23
Protein..	34·24	34·39	33·86	28·17
Carbohydrates....	36·33	36·22	34·05	25·48
Fat..	17·53	17·85	18·60	36·21
Lactic Acid	3·67	3·62	2·31	3·39
Total....	99·44	99·15	98·18	99·24

ACIDITY TEST

Gms. Lactic Acid per 100 c.c. 1 to 10 (wt.) Protein Milk Powder Mixture
Average of Two Determinations

	H.S.C.	1	2	3	4
7-11-18					
11.00 a.m.	0·615	0·337	0·347	0·216	0·321
1.00 p.m.	0·672	0·351	0·347	0·227	0·309
3.30 p.m.	0·743	0·345	0·347	0·225	0·349
5.00 p.m.	0·774	0·351	0·343	0·227	0·357
7.00 p.m.	0·809	0·353	0·341	0·227	0·360
8-11-18					
9.30 a.m.	0·914	0·358	0·349	0·256	0·402
11.30 a.m.	0·944	0·362	0·351	0·264	0·408
1.30 p.m.	0·952	0·377	0·356	0·287	0·418
3.30 p.m.	0·972	0·402	0·368	0·318	0·433
5.30 p.m.	0·979	0·441	0·383	0·350	0·446
9-11-18					
9.30 a.m.	1·013	0·716	0·697	0·740	0·553
11.30 a.m.	0·984	0·751	0·720	0·754	0·558

The chief advantages of the powder may be briefly summarized as follows:

1. It may be kept for at least three to four months and possibly longer.
2. It may be mixed with either cold water or water to 110° F. without any separation of the curd.
3. It flows through the nipple in a manner comparable to that of whole milk dilutions; thus obviating the necessity of shaking the bottle frequently or removing the nipple.

The clinical observations on infants on the powder have been most encouraging and have excelled our fondest hopes. Generally we feel that the children have reacted more rapidly and have made a more consistent gain in weight with the use of the powder than with the liquid preparation. From the chart it will be seen that the stools became normal in a shorter space of time; that there was a more consistent gain in weight. It is to be noted, however, that as yet we have had no opportunity of trying the powder in severe summer diarrhœa; but judging from our observations so far we

COMPARATIVE CLINICAL CHART

	POWDERED PREPARATION—50 CASES						LIQUID PREPARATION—100 CASES					
Age	No. of cases	Condition on Admission			Reaction		No of cases	Condition on Admission			Reaction	
		Moribund	Acutely ill	Not ill	Stools	Wt.		Moribund	Acutely ill	Not ill	Stools	Wt.
1-3 mos.	15	1	6	8	Pasty in 3 days	Gain 5 oz.	20	3	10	7	Pasty in 5 days	Gain 1 oz.
3-6 mos.	21	1	12	8	3 days	Gain 3 oz.	25	2	10	13	9 days	Loss 1 oz.
6-12 mos.	10	0	4	6	4 days	Stationary	46	4	9	33	11 days	Loss 1 oz.
12-18 mos.	4	0	2	2	4 days	Gain 3 oz.	9	0	2	7	6 days	Gain 2 oz.

feel that the results with the powder will be as satisfactory if not more so, than with the original liquid preparation.

The authors desire to express their appreciation of the helpful co-operation of Drs. Alan Canfield, George Smith and Howard Spohn for many clinical observations; to Miss Farmer and Miss Stalsmith for numerous suggestions and much work in the preparation of the powder and to Dr. Roy Simpson for the tabulation of the clinical results.

BIBLIOGRAPHY

1. FINKELSTEIN and MEYER, Berlin, 1910—*Uber Eweissmiech.*

2. COURTNEY and FALES.—"The Composition and Preparation of Protein Milk." *Am. Jour. Dis. of Child.*, vol. x, No. 3, page 172.

3. WILCOX and HILL.—"Protein Milk as a Corrective of Digestive Disturbances." *Am. Jour. Dis. of Child.*, vol. v, No. 4, page 297.

4. ARNOLD.—"Eiweiss Milk." *New York State Journal Medicine*, February, 1915.

5. BROWN, SPOHN and MACLACHLAN.—"Protein Milk—Its Composition, Preparation and Application in the Treatment of Digestive Dustirbances." CAN. MED. ASSOC. JOURN., June, 1918.

INTESTINAL OBSTRUCTION AND ITS RELATION TO THE GENERAL PRACTITIONER

By W. A. Lewis, M.D., C.M.

Barrie, Ont.

THE subject of intestinal obstruction is of particular interest to the physician, as well as to the surgeon, because he is so frequently first called in attendance. Consequently the life of the patient often depends on his quick recognition of the serious nature of the case and the necessity for prompt treatment. It must be remembered that there are many ways in which the onward passage of fæces may be prevented and so give rise to separate names such as volvulus, intussusception, strangulated hernia, etc., yet the essential point to bear in mind is that a portion of the bowel is obstructed. This must be recognized, regardless of whether the differential diagnosis can be made out or not, else death of the patient will soon follow. Let us consider for a few moments some of the causes and varieties of intestinal obstruction, which may account for different degrees of severity of symptoms. Clinically these cases may be considered to be acute or chronic. These again may be placed roughly into three classes always remembering that two or more may be in combination, namely:

1. Those within the lumen of the bowel, such as impacted fæces.

2. Those involving the bowel wall, such as carcimona.

3. Those outside the bowel, with which it may come into apposition or from which it may receive pressure, such as hernial openings, bands of adhesions, tumors of other organs, etc.

The symptoms and signs may vary in intensity according to the variety or completeness of the obstruction. The greater the amount of strangulation present the more severe the symptoms. Nevertheless, whether severe or not, these symptoms will appear in fairly definite order. The first is usually pain. In acute obstruction with marked strangulation this is most intense and

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almost constant. It is felt usually all over the abdomen but may be referred more particularly to the umbilical region. In less acute cases the pain is paroxysmal. In most cases the pain is soon accompanied by vomiting. The stomach contents first appear, then yellowish or greenish coloured fluid, and after a time very foul-smelling vomitus, which has a fæcal odour. But let me warn you not to wait for fæcal vomiting before making your diagnosis or deciding that operation is necessary. Frequently the patient takes a laxative with the hope of obtaining relief, but finding none, now sends for the doctor. With the foregoing history to hand he should immediately make search of the hernial apertures, and if he finds no cause in these, he should immediately examine by further direct inspection and palpation. It may prove very difficult on account of tenderness or distension to find any deep-seated mass. If the tenderness is fairly well localized, it will direct one to the area of trouble. If the patient is not too fat, you may also get some aid from the region of the distension. Where you are able to see evidence of peristalsis, but no flatus or fæces being expelled, look for obstruction in the small intestine. If you can see the outline of the ascending or transverse colon, obstruction of the large bowel should be suspected. Should the muscular rigidity be very marked, whether there is much distension or not, beware of considerable strangulation or perhaps an acute inflammatory condition, such as appendicitis or peritonitis. The patient may have one stool and then constipation becomes absolute—even repeated enemata returning clear. It is important in giving the enema that no air remains in the tube so that there will be no mistake as to whether flatus is expelled or not. Other signs sometimes present are tenesmus, passing of bloody mucus, thoracic breathing, sunken eyes, and later, marked thirst. In the more acute conditions the patient may be curled up and have the appearance of suffering extreme agony, his temperature being subnormal and pulse small and weak. The chronic cases or those with no strangulation will have this appearance only during the paroxysm. You may have noticed that I have referred frequently to the presence or absence of strangulation as having considerable bearing on the severity of the case. This is because of the nutritional changes which take place in the tissues, these being the result of interference with the blood supply.

The experimental study of intestinal obstruction by Brooks, Schumacher and Wattenberg[1] shows how important it is to give relief before the circulation of the affected bowel becomes dis-

turbed. By repeated experiments on dogs they found that by tying a loop of gut at both proximal and distal ends and then ligating the veins in the mesentery of the occluded portion, the animal soon became desperately sick and died inside the twenty-four hours. After death it was found that the mucous membrane of the occluded bowel was completely destroyed. The contents of the loop consisted of thick bloody fluid of foul odour. This, however, was not extremely toxic as 30 c.c. injected intravenously were required to kill a healthy dog.

By another group of experiments they isolated a portion of bowel and carefully turned in the ends so as to invert the least possible amount of bowel wall. The continuity of the intestinal tract was re-established by lateral anastomosis between the proximal and distal stumps of bowel. The vascular supply remained normal. In two days the animal was up and seemed quite well. In fifteen days it ate well, had no vomiting but was losing weight. After becoming drowsy, it was sacrificed in twenty-one days. The peritoneal cavity appeared quite normal except for the markedly distended loop of bowel. The drowsiness was considered to be the result of this distension to the point at which there was beginning nutritional change in the mucous membrane and a beginning impairment of its normal selective power of absorption. The mucosa of the occluded area was opaque with a few small irregular hæmorrhagic areas. The loop contents was a thick grey material of very foul odour. This proved to be very toxic as 2 c.c. injected intravenously killed a healthy dog in seven hours. The animal vomited freely, passed bloody stools and showed extreme collapse before death. That the failure to develop symptoms in these instances of simple obstruction of loops for long periods is not a result of the animal developing immunity has been proven by Dragsted, Moorehead and Bursky[2], who have shown that symptoms and death rapidly follow the ligation of the veins of such loops. It was also shown that the higher loops caused earlier symptoms and death. This was on account of more rapid distension of the bowel from a greater secretion of fluids into the lumen, and consequently more rapid nutritional changes in the mucous membrane.

The foregoing experiments, as well as those of Murphy and Brooks[3], point out the necessity of differentiating between two important factors, namely, the production of toxins and absorption of toxins. When one is called to see a case of obstruction, the production of the toxins may already be going on, but it is his duty to see to it that there is a minimum amount of absorption.

How can this be accomplished? By immediate operation. By relieving the strangulated vessels and thereby preventing the necrosis of mucous membrane. Thus by preserving the mucosa you will lessen the amount of absorption. It has been proved by a large number of investigators that the toxic substance produced in the lumen of the obstructed bowel is not absorbed by the normal mucosa. This fact has never been appreciated by many physicians or surgeons. Therefore, remember that absorption of toxins is aided by damaged mucosa, and that the mucosa is damaged by strangulation.

Wilkie[4] has made experimental observations on the cause of death in acute intestinal obstruction and suggests three theories for the high mortality in these cases:

1. Secondary peritonitis.

2. Splanchnic paresis, or draining of the body fluids into the portal area followed by cerebral anæmia.

3. Toxæmia resulting from the absorption of poisonous products from the upper bowel.

Deaver[5], of Philadelphia, reports two hundred and seventy-six cases with a mortality of 42 per cent., and he attributed this high mortality to the late stage at which many patients come for operation.

In smaller hospitals, such as ours, it is not usual to have to deal with intestinal obstruction, but one must ever be on the alert for it when dealing with acute abdominal conditions. During the past year dating from June 1st, 1917, to June 1st, 1918, I have performed nine operations for various types of obstruction, and a short synopsis of the cases and the results will serve to impress upon all the advisability of early operation.

Case 1. Baby C., first symptoms 6 a.m., May 31st. First seen about 11 a.m., June 1st. The patient was brought to hospital a distance of nine miles, and operated on at 4.30 p.m. A three and a half inch intussusception was found at the ileo-caecal valve. This was reduced and the baby made an uninterrupted recovery. Those of you who were at our meeting last year will remember seeing the case.

Case 2. Mr. R., patient of Dr. A. E. Murphy, had been subject to attacks of cramps followed by diarrhœa for two years. On the afternoon of August 3rd, Dr. Murphy was called for a similar attack of pain. Vomiting began early on August 4th, constipation was absolute and enemata did not give relief. I saw him about

11 p.m. Distension of the ascending colon was easily visible. Vomiting had become yellowish in character. I brought him to the hospital and operated about 2.30 a.m. August 5th. A mass was found in the descending colon opposite the lower pole of the left kidney. Certain glands were found enlarged and I removed one of these for examination. The pathological report showed it to be a columnar celled adeno-carcimona. I did a colostomy in the region of the cæcum. Patient made a good recovery, has gained several pounds in weight, and is now doing light work.

Case 3. Mr. R. G. Patient developed a severe pain in the abdomen after supper on September 3rd. Vomiting began about 10 p.m. First seen about 1 a.m. September 4th. There was a history of appendiceal abscess drained three years before. He also had a history of jaundice accompanied by severe pain about three and a half years before. His pain was intense and his whole abdomen was rigid. I brought the patient back to the hospital, ordered high enemata and hot local applications over the abdomen. The enemata returned clear and I operated about 10.30 a.m. and found about fifteen inches of small intestine, black in colour, being strangulated by a long adhesion no thicker in the centre than a strand of yarn. This was liberated, the colour of the loop began to improve, the abdomen was closed, and after three very anxious days the patient began to make good recovery. The vomiting had not become fæcal.

Case 4. Mr. B. M. Patient of Dr. N. L. Rogers. About 1 p.m., September 17th, pain began while patient was at work. Dr. Rogers was called and found a lump in the right inguinal region which he partially reduced. This relieved the pain, but reduction of the lump was incomplete. About 5 a.m., September 18th, the pain, accompanied by vomiting, returned. Dr. Rogers called me about 8 a.m. The patient was brought in to hospital and operated upon about 9.45 a.m., and we found the appendix in the inguinal canal. The appendix was removed through the hernial opening and a radical cure for the rupture performed. The patient made an uninterrupted recovery.

Case 5. Mr. M. H., on September 25th, about 2 p.m., complained of pain and noticed a lump in the right groin; the pain recurred at intervals and he vomited about 2 a.m., September 26th. I saw him first about 3.15 a.m., took him to the hospital, and operated about 5 a.m., and found a strangulated femoral hernia about two inches of the bowel was of a shiny black colour. Considerable brown fluid escaped when opening into the hernial sack. On re-

lieving the strangulation, the colour of the bowel improved. It was returned to the abdomen and a radical cure performed. The patient made an uneventful recovery.

Case 6. Mrs. S. W., had an abdominal operation through the median line several years before. Last year she had frequent attacks of severe pain and a mass, which was reducible, appeared to the left of the old incision. On opening, I found four apertures and four sacs with adhesions to coils of intestines in close proximity. The adhesions were broken down, the sacs dissected out, and the wall firmly closed with good results.

The next case showed undoubted signs of chronic obstruction, but I did not think the patient's condition would be much improved by operation. You may judge for yourselves.

Case 7. Mrs. C., aged seventy-five. I was called first on August 18th. She had complained of cramps at intervals for six months. I found distension of the ascending colon with visible peristalsis, but the bowels had been kept active by the use of liquid magnesia. The pain appeared at rather long intervals, so I advised the use of liquid paraffine which helped the distension and relieved the pain. I could feel a mass about the region of the hepatic flexure and diagnosed carcinoma. The patient had had what appeared to be Rodent-ulcer of the right cheek some two years before for which she refused suitable treatment. She had lost greatly in weight and strength, so I concluded that a colostomy would be about as disagreeable as her present state without offering any chance of prolonging her life. When explained to the relatives they heartily agreed. The patient died suddenly on the morning of December 5th.

Case 8. Miss V. S., aged seventeen. Just before noon, February 9th, 1918, Dr. Little, of Barrie, was called and found that this patient had been suffering from appendicitis for nearly one week. He advised immediate operation. On opening the peritoneum I noticed a foul odour and soon found a badly-ruptured appendix and considerable fæcal matter, free in the peritoneal cavity. This was mopped out, appendix removed and three large cigarette drains inserted. After a stormy convalescence, which gave us considerable anxiety, the patient began to progress favourably. The wound healed and the patient was allowed home. For nearly three weeks she had some pain in the abdomen which was relieved by enema. In the afternoon of March 28th the pain became severe and I was called in. The bowels had moved well

in the morning, so local applications were applied. The patient slept some during the night and enemata brought flatus next day. During March the 30th, the pain returned at intervals and the enemata began to return clear. There was little or no distension but a peristaltic wave could be seen when the pain came on. On opening the abdomen, there was a large band, two and a half inches long by one-third inch thick, holding a coil of intestine. The bowel was distended above and normal below it. This band was tied off as well as twelve or fifteen others. In fact, there seemed to be almost an agglutination present. The abdomen was closed, the wound healed by first intention and the patient was allowed home in two weeks.

However, on the afternoon of April 26th, pain and vomiting again occurred. There had been a fair stool in the morning. The pain was paroxysmal and there was some soreness in the left iliac region. An anema brought a large movement and flatus about 10 p.m. Another about 7 a.m., April 27th, brought more flatus and some fæcal matter. However, peristalsis was plainly visible with each pain and Dr. Little and I agreed that surgical interference was necessary. The patient was removed to the hospital and on opening the abdomen, there was a long band of omentum which extended to the brim of the pelvis and firmly fixed across a coil of ileum. The loop seemed to be half turned on its axis as if it were a beginning volvulus. All the ragged ends of omentum were removed and sterile liquid paraffine applied. The patient made a good recovery and we hope she may have no further trouble.

Case 9. Mr. J. H., aged sixty-five, patient of Dr. Simpson. The patient had been losing weight and having attacks of pain in the abdomen accompanied by constipation, which would be relieved by enemata, for about six months. On May 26th he noticed some pain and used enemata on the 27th and 28th without effect. Dr. Simpson was called and removed the patient to the hospital on May 29th. At operation, I found a circular carcimona of the sigmoid flexure and marked distension above it. I did a colostomy in the left anterior iliac region. Patient showed immediate signs of relief. In about a week he showed marked weakness and was becoming more emaciated. With the use of glucose enemata he began to improve and was able to go home about ten days ago.

In practically all these cases I advised immediate removal of the patient to the hospital, and if two or three high enemata were not successful, immediate operation. I did not wait for, nor want

to see, fæcal vomiting. To these points I attribute the happy results in each of the cases where operation was performed.

A word as to treatment. In a subject so comprehensive as this, I shall not attempt to outline the surgical technique to be followed in the different types of intestinal obstruction. Suffice it to say that in the acute or markedly distended case the simplest operation that can be performed and that will produce good drainage, is the best. While it is important to have the operation carefully and skilfully performed, let me impress upon you that it is not the most important thing. *The most important thing is to have it performed early.* Do not wait for fæcal vomiting. When vomiting of the later stages makes its appearance it indicates that there is already a large collection of poisonous material in the bowel and that the prognosis is grave. Do not wait to diagnose between different varieties of obstruction. What does it matter whether it be a volvulus, or an internal hernia? There is one thing indicated, and that is, immediate operation as soon as you can come to the conclusion that there is a mechanical stoppage to the onward passage of fæces and flatus anywhere in the intestinal tract. Deaver[6] states "that it is not too much to say that acute abdominal pain which causes vomiting, unassociated with diarrhœa is, in nine cases out of ten, due to a condition best treated by immediate operation. With all the diagnostic acumen available, it is frequently impossible to do more than guess at the nature of an obstruction and, after all, the improvement of our mortality from earlier operations rests upon the ability of the practitioner to size up his case as one which has suffered an abdominal catastrophe necessitating operation." Therefore, remove the patient to the hospital before he becomes exhausted by pain and treatment. If not convinced of a possible obstruction, give a high enema. This will clear away most of the fæcal matter in the large bowel. Repeat in a few minutes, making sure that there is no air in the tube and note whether flatus is expelled or any amount of fæces passed. Local application of heat may be applied in the interval. Another important point is to withhold all water, nourishment and cathartics. The latter especially add to the danger and mortality. Do not give morphia. The only possible exception to this is where you have made your diagnosis, you have got the patient's consent to an operation, the pain is intense and you have to move him several miles to the hospital. Even then do not give more than one-sixth of a grain. The first duty of every medical man is to save life, the second is to alleviate pain. With the patient moaning and groaning while you are trying

to extract a meagre history of the case and begging for relief when you attempt to make an abdominal examination it is but natural, I quite admit, that you may be sorely tempted to acquiesce to the demand and so place your second duty first in order that you may comply with the sentiments of the patient, and of the onlookers and also to give your brain a chance to think. But let me warn you not to let your sympathy over-rule your better judgment in any case which has the slightest suspicion of intestinal obstruction. Again, I say, do not give morphia. If you must temporize, do so with enemata, local applications, etc., for two very good reasons. First, the use of enemata is one of the means of helping to prove or disprove the condition and may relieve pain. Secondly, if an operation is indicated, you will get the patient's consent to it and that of his friends by simply stating the facts of the case, and the necessity for immediate interference, while if you have lulled him off to pleasant slumbers by the use of an opiate, you may suddenly realize that you are having to persuade and urge your patient to undergo something which he considers quite unnecessary. Furthermore, if an unhappy result should follow the friends will place the onus of responsibility upon you, because of the urging, persuasion, etc., rather than on the acute condition present.

Without enlarging on the subject further, I believe the following conclusions may fairly be drawn:

1. The rapidity with which the accumulation of deadly toxic material takes place in the gut above the obstructing point and the danger that is thereby added to the simplest abdominal procedures are not sufficiently appreciated.

2. It is the gangrene consequent upon delay, the peritonitis set up by the migration of organisms through the damaged walls, the absorption of poisonous accumulations in the gut and the necessity for performing extensive and less favourable operations on account of added pathology due solely to delay, that are responsible for the usually heavy mortality.

3. In the majority of our text-books the characteristic features are beautifully delineated, faecal vomiting is emphasized, but nowhere is it stated, that to wait for classical symptoms is in a large percentage of cases to invite death to the patient and court condemnation of the medical attendant.

4. Be frank with your patient. Explain that you suspect a possible obstruction and that surgical interference may be necessary. If enemata do relieve him you will find him most grateful for having

saved him from the operation, and on the other hand, if such has to be done, he will admire and appreciate how quickly you suspected the condition.

5. And lastly, do not give morphia. It will prove a delusion to your patient and a snare to yourself.

References:

1. Brooks, Schumacher and Wattenberg.—"Annals of Surgery," February, 1918, page 210.
2. Dragstedt, Moorehead and Burcky.—*Jour. Exp. Med.*, 1917, xxv, 421.
3. Murphy and Brooks.—*Arch. Int. Med.*, 1915, xv, 392.
4. Wilkie.—*Br. Med. Jour.*, 1913, ii, 1064, and "Med. Annual", 1915.
5. Deaver.—*Ibid*, 1915, i, 198, and "The Med. Annual", 1916.
6. Deaver.—"The Medical Annual," 1911.

THE HALIFAX MEDICAL SOCIETY

This Society held two largely attended meetings at Camp Hill Military Hospital by kind permission of Colonel MacKenzie, officer commanding the military hospitals in Halifax. The meeting on February 19th was given up to demonstrations of the surgical aspects of nerve lesions in returned soldiers. Some instructive conditions were demonstrated by Captain V. L. Miller, C.A.M.C. At the meeting on March 19th, a number of interesting medical cases were demonstrated by Dr. A. Birt, consultant in medicine to the hospital. The Society held its annual meeting on April 23rd in the City Chambers. The retiring president, Professor John Cameron, was in the chair. The Mayor of Halifax, Dr. Hawkins, was elected president for the ensuing year. Captain Roy Lindsay, C.A.M.C., was elected secretary-treasurer.

A committee was appointed to wait on the Halifax Relief Commission with a view to see whether the history of the medical aspect of the disaster could not be published as a separate volume, instead of waiting to be incorporated in the final report of the commission.

John Cameron, M.D., D.Sc., F.R.S.E., professor of anatomy in Dalhousie University, has been elected a Fellow of the Royal Society of Canada.

ARTHRODESIS OF THE HIP JOINT AND ITS INDICATIONS

By J. A. Nutter, M.D.

Montreal

THE operation under discussion is one designed to produce bony ankylosis in the hip joint, and thus to afford relief to a class of sufferers for whom formerly but little could be done.

All here have doubtless been called upon to treat adult patients with crippled and painful hips. By this is meant patients who have for long suffered from some form of arthritis of the hip joint, usually termed chronic rheumatism. The result of this long continued arthritis is often the destruction or crippling of the joint involved, as shown by deformity, shortening of the leg, great restriction of motion, and pain on walking. The question of the treatment of the original arthritis, of whatever source, is not meant to be discussed here. It may have been tubercular, gonorrhœal, traumatic or otherwise at the onset. What we are now concerned with is the problem of affording relief to the patient with a stiff, painful, and often deformed hip joint.

Let us take a typical case of arthritis deformans of the hip joint in an adult. The *X*-rays show a mutilated joint, the mechanism of which is destroyed by loss of bone and articular cartilage, and in certain cases by extensive hypertrophic deposits of bone along the joint margins. The ligaments are fused and adherent to the underlying joint structures. A small amount of motion is left, but weight-bearing is painful, and only too often a single unguarded movement causes intense agony. There is probably flexion deformity. The original disease, the source of all the trouble, seems to have run its course, leaving the patient crippled. We have, let us assume, tried to alleviate his suffering by baking, massage, fixation of the joint by various measures, manipulation to break up the adhesions, cures at various springs and hot baths—and still our patient has to walk slowly and painfully with crutches or a cane.

Why does he suffer? It is not because the arthritis is still active. It is because his hip joint, as a piece of mechanism, is hopelessly ruined. Movement in one direction causes a painful pull

on some tender adhesions, movement in another causes roughened joint surfaces to grate together. It is *because* of his movement in the hip that he suffers, and if he had *no* movement his pain would be gone. We know, for example, that patients with tubercular hip disease, if left with bony ankylosis, suffer no more pain. Not only do they not suffer, but they run very little risk of recurrence of their disease. Joint disease quickly disappears when the joint is no more, and without motion there is no pain.

Our friends the veterinarians have for years practised the artificial production of ankylosis in various joints of the horse for the relief of pain and disability. The veterinary surgeons stiffen the joints of the hock, for example, by the deep introduction of the actual cautery into the joint until synovial fluid escapes. With this they combine the injection of irritants, such as the iodide of mercury, setting up a violent arthritis which results in ankylosis of one form or another. This procedure, I am assured, gives good results.

It is now about ten years since Albee of New York described an operation to stiffen and immobilize the hip joint by bony ankylosis. He advocated it, and first practised it, only in cases of arthritis deformans of the hip joint in adults, where in spite of all palliative measures, pain persisted and the patient remained crippled. Albee practised an anterior approach to the hip, and with a chisel levelled off the upper surface of the femoral head and the adjoining upper portions of the acetabulum. In this way he brought raw bone surfaces together, which in the course of a few months became firmly united. A plaster spica was applied after the operation with the thigh in abduction, and after a few months the patient had a painless but stiff hip joint, which bore weight well. The freedom from pain was due to the absence of any motion in the hip.

Albee's original operation for arthrodesis of the hip joint had a somewhat limited field of usefulness. It was practised by him as before only in cases of hypertrophic arthritis of the hip. Brackett of Boston has for some time been engaged in improving the operation, and has, in addition materially enlarged its field of usefulness. In a paper on the different approaches to the hip joint (*Boston Medical and Surgical Journal*, February 15th, 1912), Brackett points out the difficulty of reaching anything but the neck of the femur, and the edge of the head by the anterior approach. It may be well to note at this point that the so-called anterior approach to the hip joint, as used by Albee, is through an incision from the anterior superior spine downwards. The sartorius and the tensor

fascial femoris are separated, while the deep-lying rectus femoris and iliacus are retracted to the inner side. With strong retraction a limited view is offorded of the femoral nerve and a small portion of the head.

An approach allowing a much freer view of the hip joint is afforded by the so-called latero-posterior route, which Brackett recommends for such an operation as arthrodesis. Here the incision is from the anterior superior spine downwards and backwards to the great trochanter, then directly downward along the femur for two inches, with a short backward incision where the two first incisions meet. The tensor fasciae femoris and the gluteus medius are separated, the fascial expansion of the gluteus maximus is cut through in the line of the posterior incision, and the great trochanter, with its many muscular attachments, is exposed. The upper part of the great trochanter is then chiseled free, carrying with it the gluteus and other muscles which overlie the femoral neck and head. After reflecting these upward and backward the joint capsule is exposed. On opening this a splendid view is afforded of the hip joint, and with a chisel the contiguous surfaces of femoral head and acetabulum are shaped to afford flat bony contact over as great an extent as possible. In closing the wound the trochanter is wired into place. A spica is applied with the leg in abduction, to remain on several months. This spica is at first made double, to include the well hip and thus to increase the immobilization.

The cases where arthrodesis of the hip seems to be specially indicated are as follows:

1. Monarticular hypertrophic arthritis of the hip joint, particularly in working people who need a straight weight-bearing leg. Nature tends in time to afford a cure for this distressing affection by producing gradually a stiff joint. The operation greatly shortens the period of disability. It is for this class of patient that Albee originally advised the operation. One must be careful not to operate on too heavy or too old patients, or where there is active disease in the other leg.

2. Deformity with or without pain, in adults following hip joint disease of childhood, in which ankylosis is not complete. Such joints afford a perpetual menace owing to the danger of recurrence of active disease. Such joints are quite often painful, this being due to excessive joint strain in a mutilated hip. By the arthrodesing operation, not only is pain and deformity re-

moved, but the patient is assured against a return of active disease. Such cases must be chosen with care.

3. Deformity with incomplete ankylosis after acute infectious arthritis of the hip (*e.g.*, gonorrhœal arthritis). This is perhaps the most favorable class to operate on. One has not to wait so long after the subsidence of the arthritis as in the case of tubercular hip disease.

4. Traumatic conditions and old fractures of the femoral neck, where deformity persists with disability and pain.

To summarize briefly:—In cases of persistent and painful disability at the hip, an operation for arthrodesis affords great relief from pain and gives a good weight-bearing leg.

For the past five years the public demand for dental service has been greater than the normal supply of operators, and it is the opinion of the leaders in the dental profession that women can relieve the situation by taking up dentistry as a vocation. They can specialize in the treatment of diseases, which is a most essential work, and thus enable the men to devote their entire time to the practical side. Owing to the great demand made on modern dentistry, and unusual war conditions, which have absorbed a large number of doctors in special work, it is also the hope of the profession in general, that a course for women dental assistants will be opened in the near future. It should cover a space of time from three to six months. During the course the assistants would be detailed to the senior students to assist with infirmary patients. Their training would be made similar to that given a nurse in order that they might be fully qualified to be of the same assistance to the dentist that the trained nurse is to the doctor. In every activity to-day less skilful employees are used, wherever possible, to relieve the more highly trained operator, and unless some plan as has been indicated is formulated, it will be impossible for the dental profession to cope with the situation.

Editorial

THE SECOND INTERIM REPORT OF THE PUBLIC WELFARE COMMISSION OF MANITOBA

TO no class of citizen should a report of this kind appeal as to the members of the medical profession. Their life work brings all of them in intimate contact with the conditions that investigations of this kind seek to remedy. It is on this account it is recommended to all readers and not only to those of the province concerned.

The first half of the report deals entirely with hospitals. The broad comprehensive view taken of this subject makes it particularly fascinating to those interested in medical education. The Commissioners have carefully studied the most advanced work on this subject and have given it their most enthusiastic support. The duties of a hospital in the direction of education are explained at length as they apply to medical students, the staff and medical profession, nurses, internes and the general public.

They advocate that the private and semi-private wards should be open to all practitioners, but that the public wards in the larger hospitals must be under the exclusive control of the medical staff to insure the best results for the patients and to permit of suitable training for the students, internes and nurses. This point of view is accepted by the profession in most parts of Canada although in some centres the use of the private wards is given only to the members of the staff. While this is a debatable point among the profession it is interesting to see what conclusion a disinterested party comes to in the matter.

The strong stand taken in regard to the necessity of doing teaching in hospitals and keeping extensive records of cases, is especially commended. It is well that these two

points should be brought impressively before the public and that the necessity of having adequate records should be brought to the attention of the profession. That hospitals may be judged very accurately by the records they keep is undoubtedly true. Those with poor case reports are always inefficient and slovenly in the other details of their work.

The question of the duties of the hospital to the interne is one that is seldom brought out as clearly as in this report. While it advocates a year's internship before a license to practice is granted, it yet insists that the hospital should give the young medical man a quid pro quo.

These points are carefully applied to the different hospitals in the province and the deficiencies of each are fearlessly shown. This is all to the good and the publicity given the matters that need remedying is bound to give good results.

The prominent place given the social service branch of hospital work is much to be commended. Their sphere of usefulness in an educational capacity for the after-care of hospital patients and for the prevention of similar diseases amongst other members of the family or community is carefully explained in the report. That this support will assist this branch of hospital work is undoubted.

The second half of the report is devoted almost entirely to the investigation of the mental hygiene of the province conducted by Doctors Clarke and Hincks. The latter have exhaustively gone over this subject as it affects the different parts of the province. While their findings show that this work was badly needed and had heretofore been greatly neglected, yet it is probably true that none of the other provinces are in a better position and some are unquestionably much worse off. If even a small portion of their recommendations are carried out at once, a distinct advance will be made.

It is clearly shown how defective our immigration policy in the past has been. The nationalities of the inhabitants of the jails and asylums, the mentally defectives, the prostitutes

and unmarried mothers, are clearly given. A very large proportion of these people come from the foreign-born inhabitants.

The report on child welfare is exhaustive and very radical in its recommendations. It is a pity that the benefits from the Mothers' Allowances Act are not given more at length so that the public from other parts of Canada might be informed of this distinctly forward move on the part of Manitoba.

A BILL to create a Federal Department of Public Health was introduced in the House recently by Hon. N. W. Rowell. The usual provisions are made for the appointment of a Deputy Minister and the necessary officers and staff. A Minister of the Crown will preside over the department. The bill also provides for the creation of a Dominion Council of Public Health, the Deputy Minister to be the Chairman; the council to consist of the chief executive officer of each Provincial Department or Board of Health with three others to be named by the Governor-in-Council.

The powers of the Minister of Public Health will extend to and include all matters and questions relating to the promotion and the preservation of the health and social welfare of the people of the country. Certain particular powers are mentioned in the bill, as, co-operation with provincial and other health authorities; authority to deal with questions relating to the preservation of child-health and child welfare generally; medical care of immigrants; supervision as regards public health of railways, boats, ships, and all methods of transportation; supervision of federal public buildings in respect to the health of civil servants and other government employees; enforcement of the rules and regulations of the international joint commission in respect to the pollution of boundary waters.

ANOTHER immigration warning has been given by the Secretary of the Canadian Committee on Mental Hygiene in the statement that more than one half of the insane and

feeble-minded in Canada have been imported from abroad. When an immigrant presents himself at one of our ports, it is an easy matter to discover how much money he has, if he has tuberculosis, and if his eyes are diseased. It is harder to pass on his mentality. What may appear stupidity or even imbecility may be only a scared ignorance of our language and customs. There is often neither time nor skill to examine the newcomer as thoroughly as the situation demands. Besides constituting one of our biggest problems, we are up against a very heavy item of expense, trouble and danger. If, as Dr. Hincks says, one-half of our problem has been provided by importation, then one avenue of redress is open to us. It would be infinitely better to spend money for prevention beforehand than for detention afterwards. The immigration regulations must be tightened. Facilities must be provided for a closer examination of immigrants. The matter is a most urgent one. Immigrants from civilized countries should be compelled to present a physician's certificate of their personal and family history (in the medical sense). This certificate should have the backing of the immigrant's government, so that the expense of detention and deportation would not fall on Canada, should the immigrant prove an undesirable citizen.

The likelihood of a Provincial institution for the care and training of the blind was indicated by the Minister of Education recently in the British Columbia Legislature. The whole matter has been under consideration of the Government for some time. It is proposed to have a survey made this year with a view to ascertaining just how many blind children there are who would receive the benefit of such an institution. It was suggested that it would be well to have proper means taken to get into touch with the parents and point out to them the advantages to be derived from the prevailing systems of education for the blind. Many blind children throughout the province were not being dealt with and the time was ripe for a proper Provincial institution.

The Association

ANNUAL MEETING, QUEBEC, JUNE 25TH TO 27TH

Preliminary Programme

Address in Medicine:—W. S. Thayer, M.D., Professor of Medicine, Johns Hopkins Hospital, Baltimore.

Address in Surgery—Jasper Halpenny, M.D., Associate Professor of Clinical Surgery, University of Manitoba, Winnipeg.

Addresses in Public Health—J. W. S. McCullough, M.D., D.P.H., Chief Officer of Health, Province of Ontario, "Sanitation and the War." J. D. Pagé, M.D., Medical Superintendent, Quebec Immigration Hospital, "Conscience publique et hygiene publique."

Address by Major-General J. T. Fotheringham, Ottawa—"The Organization of the Canadian Army Medical Corps."

Section of Medicine

A. D. Blackader, Montreal—"A review of our present knowledge regarding the conditions of acetonuria, acetonæmia and acidosis."

D. A. Craig, London—"Physical examination of the chest."

G. G. Campbell, Montreal—"Lantern demonstration of skin diseases."

H. B. Anderson, R. W. Mann and H. M. Tovell, Toronto—"Interrelationship of mouth infection, neurasthenia and exophthalmic goitre."

L. V. Hamman, Baltimore—"The practical significance of a small amount of sugar in urine."

F. McKelvey Bell, Ottawa "Development of medical branch, Department of Soldiers' Civil Re-establishment."

C. B. Farrar, Ottawa—"Psychiatry in soldiers' civil re-establishment."

H. A. Farris, St. John, N.B.—"The tuberculous hospital and dispensary."

W. F. Hamilton, Montreal—"Pneumothorax in influenza epidemic."

J. C. Meakins, Montreal—"Chlorine gas poisoning—late results."

E. H. Young, Cobourg, Ont.—"The care of military mental cases."

A. H. Gordon, Montreal—"Internal hydrocephalus and the Nonne-Froin syndrome."

F. G. Finley, Montreal—"A case of infected cardiac thrombosis simulating malignant endocarditis."

D. Masson, Montreal—"The effectiveness of the Allen method in the treatment of diabetes."

H. B. Cushing, Montreal—"The importance of secondary infections in the contagious diseases."

E. C. Levine, Montreal—"Indications and results of blood transfusion."

Albert Jobin, Quebec—"Heat and infant mortality."

A. Vallée, Quebec—"A case of endothelioma of the pleura with multiple metastasis." Presentation of specimens.

A Vallée and H. Laliberté, Quebec—"De l'Homogénéisation des crachats pour la recherche du B. de Koch."

James Third, Kingston—"Danger signals in cardio-vascular affections."

Fletcher McPhedran, Toronto—To be announced.

Lionel M. Lindsay, Montreal—"Infantile tetany (spasmophilia)."

L. F. Dubé, Notre-Dame-du-Lac—"Médecine et prescription."

Doctors Fortier, Leclerc, Lessard, Rousseau, Guérard—Titles to be announced.

Section of Surgery

A. Primrose, Toronto—"Tumours of the kidney."

G. E. Armstrong, Montreal—"Focal infections; ileal and colonic stasis."

C. L. Garner, Fernie, B.C.—"Cystoscopy."

N. J. Maclean, Winnipeg—"Cancer of the rectum."

Herbert Bruce, Toronto—"Efficiency in an army medical service."

A. E. Garrow, Montreal—"Report with remarks on a case of sub-total gastrectomy for diffuse carcinomatous infiltration (malignant 'leather bottle' stomach)."

E. St. Jacques, Montreal—"Metallic plates (no screws) in the treatment of fractures."

C. B. Keenan, Montreal—"Secondary extra-dural hæmorrhage of the cord."

E. M. Eberts, Montreal—"Fœtal adenomata in the thyroid and their relation to hyperthyroidism."

L. G. Pinault, Campbellton, N.B.—"Intestinal intussusception caused by polypus."

J. L. Biggar, Ottawa—"Social insurance."

A. F. Warner, Toronto—"Tuberculosis of kidney and ureter."

J. N. Roy, Montreal—"A case of foreign body in the œsophagus removed by external œsophagotomy—cure."

W. G. Turner, Montreal—"Amputations."

R. C. Powell, Montreal—"Diagnosis of surgical diseases of the kidney."

Fraser B. Gurd, Montreal—"The surgical treatment of chronic chest sinuses."

W. Hutchinson, Ottawa—"Renal calculus."

G. M. Geldert, Ottawa—"Oil-ether rectal anæsthesia with special reference to exophthalmic goitre."

Doctors Simard, Dagneau, Ahern and Lemieux. Titles to be announced.

Section of Public Health

T. H. Whitelaw, Edmonton—"The practical aspects of quarantine for influenza."

M. M. Seymour, Regina—"The Saskatchewan Union Hospital."

C. M. Hincks, Toronto—"Mental hygiene and the medical practitioner."

W. F. Roberts, St. John, N.B.—"A provincial ministry of health."

G. S. Mundie, Montreal—"The problem of the mental defective in the Province of Quebec."

Helen MacMurchy, Toronto—"Child welfare."

Eugene Grenier, Montreal—"La lutte anti-tuberculeuse est une lutte sociale: le role des gouvernements; le role des initiatives privées pour le pays."

Joseph A. Beaudry, Montreal—"Smallpox and chicken-pox epidemic in the province of Quebec."

E. M. A. Savard, Quebec—"Les ligues anti-tuberculeuses dans les districts d'inspection sanitaires."

Gordon Bates, Toronto—"Some aspects of the social hygiene problem in Canada."

A. H. Wright, Toronto—"Hygiene for the aged."

J. A. Beaudouin, Lachine—"Epidemiology."

J. E. Laberge, Montreal—"Town planning and civic authorities."

W. H. Hattie, Halifax—"Death rate above the age of forty."

T. J. Lafrenière, Montreal—"Water supplies in Quebec."

P. H. Bryce, Ottawa—"The scope of a Federal Department of Health."

H. Palardy, Montreal.—"Hygiene in lumber camps."

A. H. Desloges, Quebec—"Mental hygiene in relation to social hygiene."

Doctors Montizambert, Couillard, DeVarennes, Savary—Titles to be announced.

Section of Obstetrics and Gynæcology

Gordon G. Copeland, Toronto—"Treatment of eclampsia."

R. deL. Harwood, Montreal—"Uterine curetage; its indications, contraindications and abuses."

F. A. L. Lockhart, Montreal—"Case-book notes."

H. M. Little, Montreal.—"Albuminuria in pregnancy."

David Patrick, Montreal—"The puerperal intra-uterine douche."

H. C. Burgess, Montreal.—"The management of labour in contracted pelves."

James W. Duncan, Montreal—"The value of the pre-natal examination."

W.W. Chipman, Montreal—"Dysmenorrhœa (lantern slides)."

E. St. Jacques, Montreal—"Conservatism in gynæcological operations."

Section of Eye, Ear, Nose and Throat

L. deV. Chipman, St. John, N.B.—"Chronic affections of the accessory nasal sinuses."

G. Sterling Ryerson, Toronto—"On ocular imbalance."

S. Hanford McKee, Montreal—"The enlargement of the conjunctival sac by the use of dental compound."

G. H. Mathewson, Montreal—To be announced.

W. G. M. Byers and F. T. Tooke, Montreal—"The surgical treatment of immature senile cataract."

H. D. Hamilton, Montreal—"Benign growths of the larynx in children."

J. T. Rogers, Montreal—"Tumour of the naso-pharynx, with pathological specimens (case report).

Colin Campbell, Toronto—To be announced.
A. D. McKelvey, Toronto—To be announced.
E. R. Wells, Toronto—To be announced.
R. Craig, Montreal—To be announced.
E. Hamilton White, Montreal—To be announced.

CANADIAN STEAMSHIP LINES—SPECIAL RATES

Although it has been previously announced that there will be no special railway rates, we have just learned from the management of the Canadian Steamship Lines that a special rate, including meals and berth, will be granted to parties of ten or over.

HOTELS

The following are the rates quoted us by the hotels at Quebec:

Chateau Frontenac:

	With bath	Without bath
Single room	$3.00 to $5.00	$2.00 to $3.00
Double room	5.00 " 8.00	3.50 " 5.00
Suites (2 people)	6.00 " 8.00	
Suites (4 people)	9.00 " 12.00	

No reduction is made in the rates of $3.00 and $2.00 quoted for single rooms, the former with, and the latter without bath. From all other rates quoted, a reduction of fifty cents will be allowed to members of the Association attending the convention.

Victoria (Palace Hill)—American plan, $3.00, $3.50 and $4.00.

Clarendon (corner St. Anne and Gordon Street)—American plan, $3.00 and $3.50.

Ste. Ursule House (corner St. Louis and Haldimand Streets)—American plan, $3.50 and $4.00.

We are informed by President Grondin that the privileges of the Quebec Golf Club have been extended to the members of the Association during the period of the meeting.

THE CANADIAN MEDICAL PROTECTIVE ASSOCIATION

Following one of the general sessions, the annual meeting of the Canadian Medical Protective Association will be held. Date and hour will be announced in the final programme.

Obituary

DR. J. D. HELMCKEN

Not only the medical profession, of which he had so long been a prominent member, but the whole community, suffered a grievous loss in the sudden death of Dr. J. D. Helmcken, which occurred on April 2nd. Esteemed alike for his ability and services to suffering humanity as a practitioner, and for his many lovable personal qualities, he filled a place in the life of his native city all his own. Born in Victoria, British Columbia, sixty-one years ago, the fourth white child in the settlement, he was the eldest son of Hon. J. S. Helmcken, who at the advanced age of nine-two survives him, having been at one time Speaker of the Vancouver Island Legislature and prominently connected with the public life of the province in the past.

Thirty-four years ago Dr. Helmcken commenced his work in Victoria, taking over his father's practice. There he remained all his life. His clientele was a wide one, his high professional attainments giving him an assured reputation. He was elected president of the Medical Society. Dr. Helmcken was the physician for the provincial jail in former years, and also the official Indian doctor. He was a specialist in children's diseases, and took a lifelong interest in St. Joseph's Hospital, identifying himself always with its varied activities. He personally contributed a handsome equipment to the operating room of the hospital. Previous to the establishment of the training school for nurses at St. Joseph's, he had prepared a course of study, and following the founding of the school in 1902 he gave a course of lectures each year. When he was carried to his last rest, the nurses of St. Joseph's were marshalled at the church doors, and through their ranks was borne the casket of the beloved physician. Broad-minded, big-hearted, with a cheery smile and hearty greeting for everybody, always ready to respond to the call of the sick and distressed, he leaves in the affectionate remembrance of thousands a monument more enduring than anything that can be fashioned out of stone or marble.

DR. ANSON BUCK

Dr. Anson Buck, M.R.C.S., the grand old man of Halton County, and one of the most notable figures in the rural portion of Central Ontario, passed away at his home at Palermo, on Good Friday at sundown. He was born in 1833 and was the last living graduate of his year in the Royal College of Medicine, Toronto. He had the distinction of practising his profession for about one year and six months before attaining the age of majority. For the past eleven years Dr. Buck was an invalid, an attack of paralysis in 1908 compelling him to withdraw from the sphere of his former activities. Prior to this he had been a keen student of political affairs and was usually to be found in the advance guard of progressive legislation, participating as well in numerous municipal and other contests. He was a staunch Liberal throughout his life. He suceeded his brother as reeve of Trafalgar Township, and continued for forty years councillor and reeve, besides being County Warden. Since his retirement he followed with unabated interest the developments in temperance legislation, of which he had been a keen supporter, and it is said the greatest joy of his last years was the enforcement of the Ontario Temperance Act. A keen politician, a staunch friend, Dr. Buck was a man of remarkable attainments and experience. He was a graduate of the Royal College of Physicians and Surgeons, London.

DR. RICHARD CARNEY

Dr. Richard Carney died on April 26th at his residence in Windsor. He was born at Barrie, Simcoe County, Ontario, seventy-seven years ago, a son of the late Sheriff Carney of Algoma. After graduating at Toronto University in 1869, he settled in Windsor. As a member of the Liberal-Conservative party of the border county, Dr. Carney received many government appointments for his services: he was collector of customs and postmaster at Windsor. He was the last of Windsor's famous triumvirate—Drs. Casgrain, Coventry, and Carney—who controlled the policies of the Conservative party in Essex County for twenty-five years. Through the efforts of Dr. Carney the maternity wing of Hotel Dieu was opened, one of the wards being named after one of his daughters. He was an active member of the Board of Health, of which he was chairman for several terms. He was also consulting physician for the Grand Trunk railroad. Previous to his decease Dr. Carney had been ill several months from paralysis.

DR. LOUIS EDOUARD DESJARDINS
1837–1919

On March 2nd, Laval University of Montreal had the misfortune to lose their oldest professor, and the medical profession one of its most distinguished members.

Louis Edouard Desjardins was born at Terrebonne, on September 10th, 1837. He studied medicine at Victoria University, receiving his medical degree in 1864. He practised general medicine for seven years, and then he made his first voyage to Europe, where he devoted his time to ophthalmology. In London, he followed the clinics of Bowman and Critchett, and in Paris those of de Wecker, Galzowski, Sichel and Meyer. Returning to Montreal in 1873, he established the "Institut Ophthalmique de l'Asile Nazareth," and practised there as oculist for more than thirty years. He was one of the founders of the journal *L'Union Medicale*," and some years later, of the *Gazette Medicale*.

In 1882, Dr. Desjardins was appointed professor of ophthalmology in the "Ecole de Médecine et de Chirurgie de Montréal," and oculist to the Hotel-Dieu, where he gave his lectures till his last illness. At the time of the affiliation of the "Ecole de Médecine et de Chirurgie de Montréal," with Laval Undiverity, under the name "Faculté de Médecine de l'Université Laval," he retained the chair of professor of ophthalmology.

Dr. Desjardins, who has published a number of papers on cataract, glaucoma, affections of the eyelids and refraction, interested himself especially in ocular researches on the deaf and dumb.

Endowed with those most beautiful qualities, charity, modesty, and urbanity, Dr. Desjardin's death is a loss which will be felt by the whole medical profession, by his numerous patients and by those friends in France whom from time to time it was his happiness to meet.

Dr. A. D. Macdonald, formerly of New Brunswick, died in Montana on April 5th. He was superintendent of the state tuberculosis sanitarium at Galen, in Deer Lodge county. He graduated at McGill University and practised medicine in St. John West, until forced by ill-health to seek a different climate.

The death of Dr. S. A. Verge, at the age of sixty-five years, occurred unexpectedly at Quebec recently. Dr. Verge had practised in that city for thirty-seven years.

Miscellany

News

THE WESTERN PROVINCES

The recent survey into the condition of the insane and feeble-minded in Manitoba has been reported on by Professors Hincks and Clarke, and the report was handed to the attorney-general who submitted it to the consideration of the government. Increased accommodation at the Brandon Asylum is necessary, and a proposal is on foot to meet the difficulty by the expenditure of a sum estimated at something approaching half a million dollars. Many of the patients who are, or have been under treatment, are not permanent defectives, and it is realized that the province is not adequately equipped for the handling of such cases and provision must be made for their temporary treatment. Dr. A. T. Mathers has been in the east for some time inquiring into the best methods of psychopathic work. In deciding upon the enlargement of the Brandon institution, either cottage homes or a special dormitory arrangement will be provided for the exclusive accommodation of those patients requiring only temporary treatment.

The Winnipeg General Hospital Board is planning a yearly clinic week to which physicians from the entire West will be invited, and which will serve as an exchange of experience and ideas. With it is the proposed formation of an Internes Alumnæ Society to bring former members of the house staff together.

A psychopathic ward where alleged insane persons will be kept under observation and treatment will be opened under the supervision of the General Hospital and Dr. A. T. Mathers, supervisor of the psychopathic department at the Johns Hopkins Hospital, Baltimore, will be in charge.

Dr. Alexander Gibson, M.A., M.B., C.H.B., F.R.C.S., will be one of the principal speakers at the Saskatchewan Educational Association to be held in Regina shortly. Dr. Gibson is a specialist in the surgery of deformities and bone and joint diseases, and his work in the field of nerve surgery has attracted wide attention. The subject of his address will be, "The Posture of School Children."

THE Province of Alberta is providing a special course in obstetrics for nurses who will agree to work in outlying districts. For this purpose $30,000 has been voted in the health estimates. A class of ten new public nurses has been started at Edmonton, taking a special course provided by the Provincial Government at the University, for medical inspection of school children and baby welfare work. Four nurses have already graduated, and have been assigned to different centres. This is the inception of the health work under the new department created at this session with Hon. A. G. Mackay, Minister of Health, in charge. Alterations in the new Municipal Hospitals' Act, whereby members of the hospital boards from areas within the boundaries of municipalities are elected by the people instead of being appointed by the contributing councils were brought before the legislature during the recent session by Hon. A. G. MacKay. This important change was brought about through strong opposition to the appointment system, when the bill was under discussion the week previously. Other changes in the Act were introduced, one providing that municipalities may borrow funds to supply nurses where needed. Mr. Mackay strongly urged the establishment of training schools for superintendents or matrons. Arrangement is made in the bill for arrangement with some of the larger hospitals for such training schools. The question of establishing sub-hospitals was reconsidered. A limit was made that no sub-hospital should be established within thirteen miles of a main hospital, and then only with the consent of the minister. Consideration will be made, however, for emergency hospitals in mining districts.

An important series of lectures during the months of February and March, under the auspices of the Alberta Public Health Inspectors' Association were recently given in Calgary. Well-known health officials and other medical men of standing participated. The programme was varied and interesting. "The City Laboratory and its Relation to Public Health Work," "Plumbing, Past and Present," "Water Supply and Sewage Disposal," "Modern Sanitation," "Bacteriology," "Inoculation and Immunity from Disease," and others. A fall session will be continued in October. The lectures were specially intended for those who intend to qualify for public health work in its various branches.

THE Provincial Government of Saskatchewan has selected Weyburn as the site for the proposed mental hospital, and has appointed Dr. R. M. Mitchell, speaker of the legislative assembly,

as superintendent. Dr. Mitchell has resigned the speakership and his seat in order to assume his new duties. The cost of the mental hospital is estimated at $1,000,000, of which $250,000 was appropriated by the last session of the legislature. The hospital will have a capacity of 1,600 beds when completed.

The Social Service Council of Saskatchewan held its annual convention some time ago. It was widely attended, the secretaries of the Council having sent out a circular letter inviting the attendance and co-operation of the public. Special addresses were given by those who could speak with authority on the subjects under discussion. Dr. Clarence M. Hincks, secretary of the National Committee on Mental Hygiene, showed how mental defectiveness and venereal diseases are eating into the national life, and urged practical methods of combatting these. Judge Ethel MacLachlan spoke most effectively out of her experience as judge of the juvenile court. Dr. J. G. Shearer, secretary of the Dominion Social Service Council, spoke on the social ideals and programme of the new day. Prominent ministers and laymen gave forcible addresses and joined in the general discussions.

A conference has been arranged for May 15th, to enlist the sympathy and support of rural municipalities, towns and villages served by the Saskatoon Hospital. The important matter of providing adequate accommodations to meet the growing demands of the district will be the object of the meeting. This will be their first endeavour to bring about unity of action on a subject of vital interest to the entire community. Invitations have been addressed to the reeves, mayors and overseers of the public bodies which number seventeen rural municipalities, seven towns and seventeen village councils.

The second annual convention of the Saskatchewan Registered Nurses' Association was held on April 24th, at Moose Jaw. The Association, after considerable effort, had their registration passed by the Legislative Assembly in March, 1917. Since then, four hundred nurses of accredited training schools have become members and the training schools of the province must now employ registered nurses as members of their graduate staff. The Association is fully aware of the great need of something to meet the demand of nurses in the province, and a considerable time was given to the question of rural nursing during the conference.

The British Columbia Hospital Association will hold its next convention at Victoria on July 8th, 9th and 10th, the week following the National Nurses' Association convention, which will be held in Vancouver and will therefore give an opportunity to the nurses from all parts of Canada to attend the convention in Victoria.

A crusade against the insanitary conditions of Chinatown was recently inaugurated by the health department of the city of Vancouver. Under the Provincial Medical Health Act, six inspectors took drastic measure to enforce obedience to the law. The district had become a menace to the health of the entire city. The death rate from tuberculosis had become appalling. Thirty-six per cent. of the deaths in Chinatown were from this disease, and the death rate in the district was double that of the remainder of the city. During 1917 the death rate per thousand Chinese was 18, showing an increase last year of 4·2 per thousand; one in every 2·8 deaths was from the dread white plague. That the insanitary conditions of the district must be stamped out is the determination of the health department. "The people of Vancouver do not grasp the gravity of this menace," was the statement of Inspector Hynes, who added that pamphlets had been printed in Chinese to circulate in the locality, telling the denizens that the by-laws would be rigidly enforced.

A deputation of Vancouver medical men outlined an elaborate scheme of hospital extension before the Burnaby council lately. The proposition calls for a state hospital, more especially for infectious diseases, operated under government control, and fitted with the necessary up to date scientific appliances together with a staff of specialists and trained nurses. This hospital to be utilized free of cost to individual patients, but its operation and maintenance is to be paid for by the government with assessments or taxation on those districts which would come under the workings of the hospital, or chain of hospitals.

Hon. J. D. MacLean dealt with the medical features of the government's administration in debate on the budget. The work of the insane hospitals at New Westminster and Essendale, where 1,500 patients are cared for, was outlined. The cost per capita of maintaining the patients was eighty-one cents per day. He pointed to the necessity of making adequate provision for the care of the mentally defective children, of whom some 500 to 1,500 are

believed to be in schools, and stated that through an arrangement made with Dr. Clarke of the National Commission of Hygiene, an expert would go to British Columbia in April and make a survey of the children in the schools, and upon that survey will be based the system of cottage institutions it is proposed to inaugurate at the mental hospital at Essendale, where adequate steps will be taken to assist the mental development of such defectives.

The steps taken to improve health conditions in the eight hundred or more camps scattered throughout the province, and the excellent results following the establishment of police supervision and inspection were described by the Minister, who stated that the department had not as yet been able to secure a competent man for the position of travelling medical officer created last year, but valuable work has been done through the issuance of pamphlets to the number of 150,000, of which 80,000 dealt with the prevention of the spread of tuberculosis. He outlined the arrangements made with the Dominion whereby the province will contribute $75,000 towards the construction of a hospital at Tranquille with accommodation for one hundred and forty beds. While that building will be devoted for a few years to returned soldier patients, ultimately it would be turned over to the province and afford much needed accommodation. The institution at Tranquille has done magnificent work. There was one point in the speech of the member for Similkameen that came out when the subject came up for debate in the House that will doubtless commend itself for action by the government. His proposal was a system of certificate or permit so that the whereabouts of all tuberculous patients should be verified and any charges properly debited on the province of origin.

ARMY MEDICAL SERVICES

The Distinguished Service Order has been awarded to Major Burnet Kelly, C.A.M.C., and to Major John Blair (Dental), C. A.M.C.

The Military Cross has been awarded to Captain John P. Bonfield, C.A.M.C., and Captain Walter C. Morgan, C.A.M.C.

The following received the Military Cross at a recent investiture at Buckingham Palace:—Lieutenant-Colonel Robert Gardiner, Major Henry Barrett, Major Alva Chapman, Major Arthur Jones, Captain Lambert Densmore, all of the Canadian Army Medical Corps.

THE Royal Red Cross has been awarded to the following Canadian nurses for valuable services rendered:—First Class—Jean Cameron-Smith, Matron, No. 13 General Hospital, Hastings; Martha McBride, Assistant Matron, 5th General Hospital, Kirkdale; Nursing Sister Christiana Mary Mowbray; Nursing Sister Isabella Wilson. Second Class—Martha Jane Stewart, Assistant Matron, 12th General Hospital, Bramshott; Nursing Sister Jane Glendinning; Nursing Sister Edith Louise Hibbs; Nursing Sister H. Irene Robertson.

THE following have been brought to the notice of the secretary for war for brilliant services:—H. Stevenson, H. Sweeney, M. Wallace, C. H. Witham, Medicals.

The tablet to the memory of the nine medical students of McGill University, who gave up their lives in the great war, was unveiled recently in the New Medical Building by the undergraduates of the Medical Faculty, whose president made the formal presentation to the university. Addresses were given by Dean Moyse, vice-principal of McGill, who presided, and Lieutenant-Colonel Patch, A.D.M.S., who came to pay tribute on behalf of the medical services of the army of the district. Dr. G. E. Armstrong, acting dean of the faculty of medicine, delivered the address as the tablet was unveiled. He then read the list of the fallen and their medical records. Major the Rev. Canon Shatford pronounced the dedicatory prayer. Lieutenant-Colonels Russel, Meakins, Turner and Hill, all of the military medical staff, were present.

Appointments:—Major Julian Southworth Boyd is appointed under the A.D.M.S., Embarkation.

Captain Harry Clyde Robertson is appointed under the A.D.M.S., Embarkation.

Captain Frederick Grant Banting, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Colonel Samuel Hanford McKee, C.M.G., is posted for duty under the A.D.M.S., military district No. 4.

Lieutenant-Colonel William Wylie Nasmyth, is appointed under the A.D.M.S., Embarkation.

Captain Donald Alexander Warren, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Captain (Acting Major) John Johnston is posted for duty under D.A.D.M.S., Sanitation, military district No. 1.

Captain Lawrence Roy Shier is posted for duty under the A.D.M.S., military district No. 10.

Lieutenant-Colonel David King Smith is posted for duty under the A.D.M.S., military district No. 2, on ceasing to be employed as Officer Commanding Davisville Military Hospital.

Major Alan Beech is posted for duty under the A.D.M.S., military district No. 11.

Captain John James Danby, from military district No. 3, is posted for duty in the Directorate of the D.G.M.S., Ottawa, vice Major Garnet Greer.

Major Louis Wellington MacNutt is posted for duty as Officer Commanding Charlottetown Military Hospital, vice Lieutenant-Colonel George Warburton.

Major George Garnet Greer, M.C., is posted for duty under the A.D.M.S., military district No. 3.

Acting-Major Thomas Albert Watterson, from military district No. 6, is appointed Officer Commanding, Fleming Military Convalescent Hospital, Ottawa, vice Major W. H. Ballantyne.

Captain James Giles Robinson Stone, from military district No. 2, is posted for duty on the Directorate of the D.G.M.S., Militia Headquarters, Ottawa.

Captain James Frederick Stewart Marshall, M.C., is posted for duty under the A.D.M.S., military district No. 13, and to be appointed Officer Commanding Ogden Military Convalescent Hospita, with effect from 6th May, 1919, vice Captain A. A. Drinnan.

Captain George Douglas Jeffs, is posted for duty under the A.D.M.S., military district No. 2.

Major Colin Andrew McDiarmid is posted for duty under the A.D.M.S., military district No. 4.

Major John Alfred Briggs, is posted for duty under the A.D.M.S., military district No. 4.

Promotions:—Lieutenant Philippe Auguste Charette, to be Captain.

Lieutenant Harry Herbert Bruser, to be Captain.

Lieutenant Elphage Lelande to be Captain.

Lieutenant Didace Romeo Bisson, to be Captain.

Captain Alexander Gibson to be acting-major.

Returned from Overseas—The undermentioned officers are

returned from overseas on general demobilization, for further duty, etc.:

Major F. W. Kenny, Major P. Poisson, Lieutenant-Colonel Selby, Major W. G. Cosbie, Captain R. T. Washburn, Captain J. Gibbs, Major J. T. Wall, Captain Frank Harvey, Lieutenant-Colonel C. A. Young, Acting-Lieutenant-Colonel D. S. Lomer, D.S.O., Major W. D. Kennedy, Captain H. N. Harvie, Captain A. G. Thompson, Colonel R. P. Wright, Major G. Bouthillier, Captain J. G. R. Stone, Major R. Mayrand, Captain E. B. Moles, Major R. B. Robertson, Captain D. E. S. Wishart, Major C. E. Saint-Pierre, Lieutenant G. E. W. Crowe, Major J. F. Burgess, Captain H. A. Simms, Captain Millen Alexander Nickle, Lieutenant-Colonel Z. Rheaume, Captain J. L. Hammond, Major Sir Andrew MacPhail, Major W. H. Laughlin, Captain R. Goulden, Captain W. E. Case, Major A. J. Swan, Major F. S. Ruttan, Captain Lambert Douglas Densmore, Major Leo Errold Parisien, Captain James Lewin, Major Ralph Marshall Filson, Captain Emmett Scarlett.

Book Reviews

ADVANCED SUGGESTION (Neuro-induction). By HADYN BROWN, L.R.C.P., Fellow of the Royal Society of Medicine. 342 pages. Price, 7/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London, 1918.

We think the title of this fascinating book should have been non-hypnotic psycho-therapy. It is at once an interesting book and a puzzling book. It is interesting because all the remarkable things in it are vouched for by a medical man who is L.R.C.P., et cetera, Edinburgh (what are we to understand by the "et cetera?") and it is puzzling because there is a tendency to use old terms in new senses and to invent new terms when old ones would do. The work is a record of cures effected by the author, not by hypnosis but by "suggestion" or, as Mr. Haydn Brown prefers to call it, "neuro-induction". This curious term is best explained in the author's own words, "Neuro-induction implies the accurate conveyance of reliable sensations and conclusions and their correct interpretation," etc. Now what is meant by the conveying of sensations reliable or otherwise? As an ultimate fact in some one person's experience, a sensation cannot be conveyed anywhere.

Neither can you convey conclusions, conclusions from what? The physician's arguments, apparently.

Another puzzling term is "supra conscious"; we are told in the footnote on page 22 that "all above the subconscious is supra conscious". If so, where and what is ordinary consciousness, the low, old, familiar consciousness unadorned, as it were, by a prefix?

All this is not to be taken to mean that the book is not worthy of study, for it is, every word of it. Amongst other things of great importance is the author's belief in the reality of nerve energy.

Unless nerve-energy is real there is no meaning in writing "leakage of nerve energy"; "weakened nerve influence"; "an idea has caused disturbance in bodily functioning", and so on in the same strain. The recognition of functional psychic inertia in the phrase "inertia of subconsciousness" is very interesting. The author says that Professor Adami may be quite happy with the conclusions of the work; the reviewer can assure him that there is one thing in the book which will not please Dr. Adami, and that is the belief in the reality of maternal impressions.

D. Fraser Harris.

EQUILIBRIUM AND VERTIGO. By ISAAC H. JONES, M.A., M.D., laryngologist, Philadelphia General Hospital; with an analysis of pathologic cases by LEWIS FISHER, M.D., laryngologist and otologist, Mount Sinai Hospital, Philadelphia. 444 pages with 130 illustrations. Price, $5.00. Publishers: J. B. Lippincott Company, Philadelphia, London and Montreal, 1918.

The degree of specialization in practical physiology is well shown by the need of the publication of such a book as this; for the need is very real. The understanding of the functional position of the labyrinth is one of the most recent attainments of the physiologically minded clinician. But the subject is one eminently for the specialist and needs a monograph by a specialist; such is the book before us.

The summaries of the results of the tests are given with commendable brevity. The illustrations and diagrams have been very well selected; some are for use with the stereoscope. If a criticism might be allowed as to the diagrams it is that the various nerve tracts should have been shown as neuroses, that is as processes of cells proceeding inwards or outwards in the nervous system. If the "trophic" cell is omitted, we cannot tell at a glance the functional direction of the path in question.

INFORMATION FOR THE TUBERCULOUS. By F. W. WITTICH, A.M., M.D., instructor in medicine and physician in charge of tuberculosis dispensary in the University of Minnesota Medical School. 150 pages. Price, $1.00. Publishers: C. V. Mosby Co., St. Louis; McAinsh & Co., Toronto, 1918.

This small book contains everything of interest or importance to persons affected with tuberculosis. It explains from the very beginning the physiology of breathing and its pathological modifications. Anyone reading this book will learn much besides facts about tuberculosis, for whatever is dealt with is discussed so pleasantly and clearly that the sense of technicality is lost. The elementary physiology is well put.

The remarks on alcohol bear the evidence of common sense. In the phrase, "a pessimist cannot recover", is bound up a world of meaning as to the power of the mind over the body—a real thing in spite of some philosophers.

Is not "biliousness" rather too vague now-a-days? There is no English verb "to culture" (page 21).

ANATOMY OF THE HUMAN BODY. By HENRY GRAY, F.R.S., fellow of the Royal College of Surgeons. Twentieth edition, thoroughly revised and re-edited by WARREN H. LEWIS, B.S., M.D., professor of physiological anatomy, Johns Hopkins University, Baltimore. 1246 pages; illustrated with 1,247 engravings. Price, $7.50 cloth, $9.00 leather. Publishers: Lea & Febiger, Philadelphia and New York.

To praise Gray's anatomy savours somewhat of painting the lily and throwing a perfume on the violet. It is difficult to imagine how a systematic and comprehensive text-book of anatomy could be made more systematic or comprehensive than this.

Nothing is forgotten; the naked eye appearances, development, histology, innervation, variations from the type and even much of the normal physiology of the organs are all concisely given. A special section is devoted to surface anatomy. By the use of coloured inks, the value of many diagrams is greatly enhanced.

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Annual Meeting, St. Stephen, 2nd Friday in July, 1919.

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ANNUAL ADDRESS OF PRESIDENT ONTARIO MEDICAL ASSOCIATION

By G. Stewart Cameron, M.D.

Peterboro

IT falls to my lot as President of the Ontario Medical Association to deliver the annual address, and, before attempting to discuss some of the questions which are before our profession to-day, I desire, first of all, to extend to you my sincere thanks for the honour which was conferred upon me, and, in the second place, to thank the gentlemen of the executive and of the various committees for their willingness to assist in carrying on the work of the Association. In particular I wish to thank the members of the Committee on Legislation, and especially the secretary, Dr. John Ferguson, to whose untiring efforts the success of our "Report on Medical Education" was in a large measure due. To those gentlemen who have come from overseas, and from the republic to the south, to assist in our programme, we extend our warmest greetings and gladly welcome them to our convention. May we hope that their presence with us symbolizes that unity which should exist among the various branches of the Anglo-Saxon race.

You have been called together to take part in the thirty-ninth annual meeting of this Association, and, as its executive head, it gives me great pleasure to-night to welcome you all, and to hope that in the varied programme which will be presented each one may find something to interest and to instruct, so that on your return to your several duties you may carry with you some-

Read at the meeting, Toronto, May, 1919.

thing helpful in solving the daily problems which present themselves and that you may retain many pleasant memories of the association with your friends of former days.

We are permitted to meet this year under conditions quite different from those prevailing during the past four years and a half. Since our last peace meeting in 1914, great changes have been wrought in the world. Little did any of us believe when we read of the murder of the Austrian Archduke and Duchess at Sarajevo that this was to be the beginning of a struggle that would ultimately involve as active participants nearly all the countries of the world, and that nations whose social structure was looked upon as reasonably secure, and others who prided themselves in having evolved a system of government and a masterly efficiency second to none in the world, should be so rent asunder that life and property, the church, art, and all the refinements which we in Anglo-Saxon lands hold so dear should be trampled in the dust by a proletariat made mad by the lust of power and possession. Now nations with new forms of government have sprung into existence throughout middle and eastern Europe and the geography of that part of the world must be restudied if we wish to become conversant with the many changes that have taken place.

In our own Empire we have witnessed mighty changes. On that memorable fourth of August, 1914, when the Government of Great Britain determined to back up her word pledged in treaty, by force of arms, there came as if by magic from all quarters of the Empire assurance of loyalty, co-operation, and support to the uttermost, and from that moment up to the present the determination of Great Britain and her Dominions to see the triumph of righteousness throughout the world has never faltered. Steadfastly has she kept faith with her allies during the many trying months of disastrous warfare, and in the face of an incessant propaganda sown by the enemy for the purpose of creating discord among the allied nations. We have seen her army grown from that small but glorious company of "Contemptibles", first, by voluntary enlistment, and later on, as the cry for men became greater, by compulsory service until at the end of the war over seven million men had been recruited into military service. Behind this we saw a nation to some extent resting upon its laurels gained in other days, transformed into a huge workshop of splendid efficiency. The social barriers gave way and men and women of all classes and creeds worked side by side in the great munition plants, shipyards, weaving mills and other immense war organizations. Here

let it be said to the everlasting credit of the labourer and worker of Great Britain that in the hour of his country's need he stood squarely behind his co-worker in the trenches determined to see militarism and its attendant evils destroyed forever, and truth and right living, international honour and integrity permanently established. This action of the British workmen goes far to convince us that while there may be unrest during the transition period from war to peace, he will never permit his country to be submerged by the violent and murderous doctrine of Bolshevism.

All this is something that is of interest to everyone, but out of this marvellous four years of superhuman effort the great medical organizations of the army and of civil life naturally appeal to us in a special way. The success of the gathering together of thousands upon thousands of men from all walks of life depended, in a large measure, upon the effective selection of recruits, and then upon the careful attention to their health during the period of training, and subsequently in the great bases, lines of communication, and on the actual battle front. Beginning with a small organization there grew up one of the most effective systems for dealing with the tens of thousands of casualties that occurred. When we consider that the vast majority of the medical officers were gathered from the ranks of the civil profession in all parts of the Empire, with little or no knowledge of military service, we may be pardoned if our hearts swell with pride at the very splendid manner in which their work was done. Great questions in preventive medicine, hygiene and sanitation had to be solved and it is to the credit of our profession that we are able to produce scores of men who, working in conjunction with other departments of the army, were able to solve these questions and thus permit the military leaders to place in the field soldiers physically fit and to keep them there with the minimum of disease. On the other hand the splendid service rendered by the hospitals, the physicians and surgeons, the nurses and the orderlies, must ever remain one of the bright chapters in the history of medical science. Heretofore we have seen things done, relatively speaking, in a small way, but the war compelled us to do things medically in a gigantic way. Fractures of different kinds were gathered together by the hundred in special hospitals. Wounds of the head, of the chest, or of special organs were grouped together in large numbers so that they might receive the very best attention which surgeons, specially qualified in these varied departments, might be able to give. All this has resulted in returning to efficient civil

life tens of thousands of men who otherwise would have become dependent upon the bounty of the state. Furthermore, it has given to medical science many valuable ideas which, if properly applied, will be of incalculable benefit to civil life.

In the convalescent hospitals, both in the old land and in Canada, we have witnessed the remarkable development of physical and hydro-therapy. So much did these therapeuic measures impress Mr. Justice Hodgins, the government commissioner, that in his recent report he strongly recommended a department should be at once created in our medical faculties. Further, our teaching hospitals particularly should be equipped so that students in medicine could be thoroughly trained in all these methods.

It is with justifiable pride that we, as Canadian physicians, look back over the past four years at what has been accomplished, knowing that throughout it all we have borne our part. In the glory of victory, not only over the enemy encountered in the field, but over many of those insidious foes, that in past wars have taken greater toll than the enemy, Canadian medical officers have shared, and to-night, on behalf of this Association, it is my great privilege to extend to all those men who have returned or who will return, the greetings of the medical profession of this province. Let me say to you gentlemen, that we are proud of your achievements and gladly welcome you home, believing that the knowledge you have gained, the rich experience which has been yours will immeasurably add to the profession in our homeland.

Alas! with all this glory there must come inevitable pain, for among the more than two thousand medical officers who left Canadian shores, many will not return. Cheerfully they gave up their work here and went forth to do whatever fell to their lot in the care of their fellowmen, and whether through disease or by the weapon of the enemy they made the supreme sacrifice we know they gave their lives in the performance of a duty which was entirely a service to others, and we bow our heads in token of respect to their memory. We understand that in the memorial endowment which is being raised by the University of Toronto a certain sum is to be utilized for the purpose of creating one or more fellowships in memory of those graduates in medicine who have fallen. No doubt other medical faculties will be moving along similar lines, and I would strongly recommend to the members of this Association that they give every assistance and encouragement to this movement so that these funds may be adequately provided. Let me say, gentlemen, that the duty is

ours, that the opportunity is here, and let it not be said of us that we were neglectful of our duty or indifferent to our opportunity.

Before leaving this subject, may I be permitted to say one word in behalf of those men who have carried on at home? Many medical men who, for one reason or another, were unable to go overseas, did splendid service in Canada for upon their shoulders rested the responsibility of doing the work here, and while their contribution in no way compares with that of those who accepted the greater responsibility, yet we feel that we should not fail to recognize the good service they have rendered.

Now that the war is over we must turn our attention to the various peace problems. In the world at large many old traditions and ideas have been abandoned and their places have been taken by new and, in many cases, untried ones. The balance of power among the nations is giving way to the hitherto utopian idea of a league of nations wherein the countries of the world will seek to live together in peace and harmony. In the domain of medicine things almost as revolutionary have taken place, and it will be to our advantage to study the new conditions which have arisen, and to place ourselves in a proper receptive attitude towards them.

For most of us the character of practice will be somewhat altered as a result of the return of so many soldiers who have been casualties to civilian life. As these men, either temporarily or permanently disabled, gradually scatter to their various homes through the country they will come under the care of the general practitioner. Injuries of bones and joints and of muscles and nerves will be fairly common. The care of amputation stumps and the adjustment of artificial limbs will demand a good deal of attention. On the more purely medical side there will be those disabilities such as nephritis and the pulmonary results of the various gas poisons. Added to this, there is bound to be a much wider spread of venereal diseases, and for some time to come we shall have a goodly number of men suffering from the effects of the various mental and nervous disorders resulting from the conflict. To give the best service to these men we must become conversant with the best forms of treatment adapted to these cases, and, as the Government has assumed the responsibility for the care of all returned casualties, I presume they will demand a proper efficiency on the part of the profession. Might we suggest, therefore, that medical men accept every opportunity presented of obtaining a good working knowledge of this new type of practice.

In this connection, I think it a most commendable idea on the part of the Director General of Medical Services when he suggested through the Officer Commanding of the Dominion Orthopædic Hospital, the advisability of the members of our Association paying a visit to that splendid institution, and seeing at first hand the work being carried on therein. Would it not be possible to go a step farther and suggest to the military authorities that these various institutions throughout the country be made centres where clinical instruction could be given to classes of graduates. This would have a two-fold bearing. The members of the profession who availed themselves of these classes would get a good insight into the more modern therapeutic devices in medicine and surgery and, on the other hand, the military authorities and the Pension Board would have a better trained profession to minister to the disabled soldier.

This naturally brings to our minds the subject of general post-graduate training, and now that the war is past we believe one of the first questions which should interest our profession, and particularly the teaching bodies is that of developing proper facilities for the instruction of graduates. Previous to 1914 many of our men, to increase their store of medical knowledge, went to Europe, Great Britain, or the United States. For apparent reasons this is all changed and for many years to come the continent of Europe will not be the medical mecca it has been in the past. I know I am voicing the feelings of a great many of our profession when I say that we must develop within ourselves facilities for post-graduate instruction. The large clinical centres of the United States are always available for those who have the time and inclination to go abroad, but there are hundreds of men practicing in the rural sections of our province who find great difficulty in leaving their fields but who, at the same time, should have some close-at-hand means of receiving instructions in modern clinical methods.

The time has arrived when our universities should seriously consider this matter, and try to formulate some scheme whereby the graduate, after he has successfully completed his training with the faculty could be kept, as it were, under observation. The Department of Medicine should be so organized and directed that there could be constant co-operation between the man in the field and the parent body. Whether this should be carried on by the same instructors is a question for study. In this province the public has spent and is spending large sums of money equipping hospitals and laboratories wherein men are trained in the very

best methods of preventing and of treating disease. To this extent at least they are directly interested in the training of competent physicians. In consequence have they not a right to expect that this standard should be maintained throughout the physician's years of practice? Is it surprising that in some quarters we find the suggestion advanced that men in practice should be examined at stated intervals to determine whether they are keeping up to a proper standard of efficiency. We believe that this would be quite unnecessary if thorough modern graduate instruction was inaugurated and its advantages and attractions thoroughly and constantly kept before the profession. In addition your Association is making an effort to raise the standard of work in our profession by introducing through local medical societies a system of post-graduate medical study. A committee was appointed some time ago to consider this matter, and I am glad to say that success has attended our efforts to such an extent that we hope to be able very shortly to offer any local or county society a syllabus of lectures together with a list of medical men who will be available to give them, and I would strongly recommend every Association to investigate our plans and arrange where possible to adopt them for the coming autumn and winter.

Through our journals and the medical and surgical literature of the war we have learned a great deal about the brilliant work done by our surgeons and internists, but not so much about what was done to keep our troops in good physical condition, and prevent those decimating epidemics which in all previous wars have been a greater menace than the guns of the enemy. We have on the one hand the splendid work of our engineers in conjunction with the sanitary corps giving to our armies a constant supply of pure water for drinking purposes, and providing adequate sanitary arrangements. On the other hand through the compulsory use of serums and vaccines the horrors of smallpox, tetanus, enteric and allied fevers were practically eliminated. If it was possible among the millions of soldiers to reduce infectious diseases almost to the vanishing point, and if, through proper medical supervision and adequate sanitary and hygienic conditions it has been possible to build up a strong physical manhood, should not application be made of this when we come to consider civil life? The whole field of medicine as you are aware may be, broadly speaking, divided into two parts, the prevention of disease, and the treatment of disease. As we said a moment ago, much has been said about the treatment, but comparatively little about the prevention.

We believe, however, that if the army's experience is fully made use of among the civil population, preventive medicine and its resultant public health will receive a very great impetus. While a great many of the beneficient aids in the prevention of sickness have come from our laboratories, the organization and development of national public health movements must necessarily go beyond the bounds of our profession and find helpers among all classes of the laity.

It is with pleasure that we note that a Department of Public Health has been created by the Federal Government, and we sincerely hope it will be launched well equipped with suitable laboratories, and thoroughly competent men to conduct the work. Ample funds must be freely supplied for the maintainance of all its activities and it should be absolutely free from any political control. We would like to suggest that the Government provide a certain number of fellowships to be open to the graduates in medicine from our various universities. We trust that this is but the beginning of a much wider interest in matters of public health by the Dominion Government and that the many lessons learned as a result of the war will be promptly and efficiently applied to peace conditions. In the matter of venereal diseases, the army has been largely responsible for placing certain facts before the public and we believe that the public desire to see sane action taken by the Government. The Federal Authorities in assuming the treatment of the returned soldier will, we suppose, not relax their vigilance regarding social diseases among them. A matter that might well be referred to the Federal Health Department for investigation is the result of the examination of recruits under the Military Service Act. Out of 361,695 men examined, 181,255 were found to be lower than Category A, or in other words a little over 50 per cent. of the men examined were defective in some way, and let me say that in many cases this result was apparent in sections where the large bulk of the population was native born, so that the cause could not be the result of indifferent immigration. I am quite sure you will agree with me that these percentages are altogether too high for a young virile country such as Canada. Having learned these facts, are we as a nation to sit idly by and permit a continuance of this decadency? All will emphatically say no, and the public, being in possession of this information, will naturally look to us to take the lead in solving this question. Many of the defects were undoubtedly due to accidents and injuries received during adolescence, but even after eliminating all cases of

this kind, we still have a large percentage that were due to preventable causes. In order that this may not be repeated in succeeding generations, our profession should do all in its power through properly organized clinics, supervised instruction and ethical propaganda to secure healthful prenatal conditions for the mothers of our land, modern obstetrical attendance and nursing during their puerperium, and the best of food and modern hygiene conditions generally, both for the mother and child, during the succeeding months. It is unfortunately too true that our advent into this world is still surrounded by too much superstitition, and I am sorry to say carelessness, arising from ignorance. In the garden of Eden it may have been a physiological event, but under our modern conditions of life it is beset by many pitfalls.

The subject of under-graduate instruction has been receiving attention from our medical faculties, but up to the present time we have not heard the results of their deliberations. We suppose there cannot be much difference of opinion with respect to the primary studies. Anatomy and physiology, with the co-related subjects, must naturally receive very thorough and comprehensive study for upon these subjects must always rest the superstructure of the student's medical education. When we come to consider the training in the final years differences of opinion are more likely to arise.

The rapid development of medical science renders it impossible for any one man to become proficient in all departments, hence the reason for specialization. We think that the time is at hand when consideration will have to be given to the separation of medicine from surgery, and in creating a separate department of public health. If medical education is to develop along these lines the final years of study should have optional courses, so that a man after receiving a good general knowledge of medicine might concentrate his efforts along congenial lines and more thoroughly fit himself for the particular work in which he is to engage. If this were done we think the degree of M.B. should be conferred upon graduates as a mark of general proficiency, and when a man has completed the work in his particular department the degree of that section should be given to him, thus indicating that he is particularly qualified in medicine or surgery or whatever his special branch may be. In this way the public would gradually come to recognize these qualifications and the holders thereof would receive a recognition which they do not at the present time.

By increasing the time of study to six years and also by the

greatly increased cost of living a very valuable type of man will be eliminated from our student rolls. I refer to those who in former years gained their education by their own individual efforts and in many instances were numbered among the brightest lights in our profession. To offset this might we suggest to some of our wealthy laymen that they emulate the example of Sir John Eaton, whose princely gifts to medical education rank him among our best benefactors on this continent, and provide fellowships which would be of real assistance to our graduates. This would at the same time tend to keep many valuable men at work in our own land in place of having them go elsewhere and thus losing their services to the country.

It was disclosed in Commissioner Hodgins' report that there was not complete harmony of opinion between some of our universities and the College of Physicians and Surgeons regarding the jurisdiction over the examinations for license to practice. May we be permitted to express our regret at this and at the same time to say that we think it would not be in the best interests of the universities, or of the profession at large, to have centralized in the universities the power for which some of them are asking, and we are glad to see that Mr. Justice Hodgins took a similar view in his report. There are many men outside of the medical faculties who from travel and practical experience are quite competent to give valuable advice on medical education, and we think it would be unfortunate if this opinion should be eliminated. Rather we think some plan should be devised whereby this opinion could be utilized.

Centres of medical activity are gradually developing in Ontario. If our population is to increase even as fast as some of our moderate prophets foretell these centres will rapidly grow and become no mean factors in shaping the medical affairs of this province. We would therefore suggest that in any legislation that may be forthcoming these facts be recognized and that the interests of the general profession be carefully guarded. At the present time the only official avenue through which we may give expression to our views is the College of Physicians and Surgeons, and while there may be a necessity for some reorganization of that body we believe there is no real call for departing from the principle underlying its position with respect to medical education.

The most important problem before our profession in this province to-day is the new medical legislation which is bound to appear in the near future. As you are all aware the report made

by Commissioner Mr. Justice Hodgins has been presented and the committee of this association, in conjunction with the College of Physicians and Surgeons, placed their views on the report before the Government last November, and it was generally understood at that time that legislation would be brought down at the annual session of the legislature this past winter. For some cause this was not done and, so far as I am aware, no reason has been given by the Government for the non-appearance of the proposed bill. We do know, however, that very strong opposition to the Hodgins' report developed among the irregular practitioners of this province, and it is possible that the Government desires more information before embarking on this new legislation. We are inclined to think that a good many medical men do not realize the gravity of the present situation. The Commissioner in his report very strongly upholds the general position taken by the profession; but when a government considers legislation it is naturally guided to a very considerable degree by public opinion, and I think we should stop for a moment and consider whether we have united public opinion behind us. Perhaps it may come as something of a shock to a good many doctors when we tell them that we doubt very much if a bill based on the findings of the commissioner could be passed at the present time for, from the replies given by many members of the legislature when approached by representatives of this Association, we believe that such a bill would have a hazardous course in Queen's Park.

The practice of medicine to the lay mind is shrouded in mystery, and it is an astonishing fact that even among the educated classes they have little conception of what medical science is really doing. On the other hand there is arrayed against us very strong commercial interests and the whole body of irregulars, and these interests are seeking to create a public opinion strongly antagonistic to our profession. We find appeals being made to the poor man, the worker or the artisan, as the case may be, urging the government of the day to resist the encroachment of the medical profession. A glaring example of this was seen in the enactment regarding the public sale of medicine for the treatment of venereal troubles. Notwithstanding the fact that the bulk of the agitation for this needed reform came from the laity, the medical profession has been accused of being the instigator of this movement with the object of getting a monopoly of the treatment, and thus increasing their incomes. In the state of unrest that is abroad today, it is difficult for any one to forecast the effect which these

propaganda will have. We believe that a great deal too little has been done in the past to bring the general public and the medical profession into closer contact. It is quite true that the personal relationship between patient and physician is often of the closest, and that many times he is the guide, philospher and friend of his clientele. But notwithstanding these happy relationships it is yet a fact that a great mass of the public know little about the profession as a whole, amd the great fundamental principles upon which is based our modern conception of medicine. The result is that much of the public's information has been received, in the earlier days, from the picturesque quack who stood on a box at the village corner and explained to an awed group of villagers the wonderful problems of disease and his still more wonderful remedies. More recently this educational work has been taken up in vigorous fashion by all sorts of patent medicine companies. Through the mail, the daily or weekly newspaper and the monthly magazine, they tell what benefactors they are to the human race, and in the various cults we have the ultra modern purveyors of medical knowledge. As a profession we should be brave enough to admit that important forces are opposed to us, and in place of treating the whole matter lightly seek by legitimate propaganda to educate the public to a better understanding of some of the principles underlying modern medicine. It is quite true that this would be a departure from our traditions, but when the whole "world is in the melting pot", we, in our profession, cannot hope to escape without some marked changes, and to my mind these will be the better for us if we try to direct the public mind to a truer conception of the scientific basis upon which we rest our diagnosis, prognosis, and treatment.

A matter which I think requires no apology for bringing before you is that of State medicine. As you all know there is a demand in some countries for Government or State control of the medical profession. In Canada, in one or two of the provinces, it has appeared as the beginning of a real issue. It is not my intention to-night to either approve or condemn. To do this intelligently we must be in possession of much more information than we at present have. Believing that it might become a live topic of interest to our profession in the future and desiring that you should be in possession of the best available information on the subject we appointed a committee, last autumn, to gather data and place it in your hands so that you might become conversant with all sides of the question. The rearrangement between

the employer and employee is to-day a very pressing question. The relationship of capital to labour is everywhere a predominating issue. We, in Canada, are not escaping this world-wide revolution, and it seems to me quite possible that a demand will be made that medicine, to some extent at least, shall come under the control of the State. In the agitation that is going on among the masses of our people higher wages is not the only question. They are demanding, and rightly too, better housing conditions, better hygienic and sanitary arrangements, more time for recreation, and better opportunities to enjoy their lives. Add to this the public opinion along similar lines that is bound to be created by our returned soldiers and you have a force that will compel any government to give very earnest consideration to their demands. As a profession we cannot stand aloof from this great movement nor assume a spirit of indifference. There never was a time in the history of Canadian medicine when we should watch more carefully the trend of public opinion, and be prepared to assist in the direction of that opinion so that the very best results will accrue both to the public and to our profession.

The matter of school inspection is one of the subjects receiving increased attention at the present time. Too little attention has been paid in the past to the physical side of our children. It is only within recent years that any real attempt has been made to develop healthy manhood and womanhood in our schools. Our educational system has disclosed a mad race to pass examinations on schedule time. The robust in body and mind succeeded while those of bright intellect but weakened bodies had to give up the contest or else fall by the wayside, physical misfits. On the other hand the child of fair physique but slow-developing mentality has too often been the butt of his more fortunate classmates or of his instructor. We trust that in the change of view that is taking place among our educationists they will insist that careful and thorough examination be made by all school children on their entrance to our public schools, that from time to time throughout their course they be submitted to further physical examination so that defects in development may be detected and proper measures taken for their correction. In this way children, weak, either physically or mentally, may be early detected, and proper plans made for their care. We believe that physical exercise both in gymnasium and on the campus, under properly qualified instructors should be part of the daily time-table in all our schools. To provide all this would entail much increased expenditure on the part

of the State, but where can money be better invested than in building up men and women of strong body and mind. Surely this is the greatest asset any State can have, and we feel that the humblest dweller in the land has a right to expect our Government to provide facilities that will enable his child to get a square deal physically during the years of his compulsory school attendance.

In the epidemic of influenza through which we have passed, the medical profession has been called upon to pay a heavy toll, and many of our numbers have made the supreme sacrifice as a result of arduous work and faithful attention to their suffering clients. At another time, and from another source, a fitting tribute will be paid to these past members of our profession, but there are two names that stand out so distinctly in my mind that I feel I cannot allow this occasion to pass without making some personal reference to them. I refer to the late Dr. Reeve of Toronto, and the late Dr. Norman Beal of London. The one had outlived the alloted span of three score years and ten, but even though his life was long it was not long enough to see the fulfilment of various projects that filled his busy mind. He was a man who had built up for himself a national reputation in his chosen field, and to such an extent had he gained the goodwill and respect of his confreres that in 1906 one of the most distinguished honours in Anglo-Saxon medicine was conferred upon him, that of being made President of the British Medical Association. It is not necessary for me to dilate upon his life, suffice it to say that it was an ornament to Canadian medicine, and an inspiration to all those who knew him. Norman Beal was a member of the executive of this Association until a few weeks before his death, when he resigned that he might accept the position of first assistant to William Mayo at the Rochester clinic. His life was cut off just on the threshold of what promised to be a brilliant surgical career. To those of us who knew him and had the pleasure of working with him, his memory will ever remain as the embodiment of that buoyant enthusiasm in his chosen profession which would go far to maintain in Canadian medicine the very best traditions of our science.

I cannot close these remarks without mentioning the splendid service rendered in the recent conflict by our nurses. They have braved the dangers of war on both land and sea, and many of them have given their lives in the service of their country. On behalf of our profession I take this opportunity of publicly recognizing the splendid work which they have accomplished. Those

who are privileged to return to civil duty should form a very strong body in their profession, and no doubt will lend considerable influence in the direction of the affairs of their Association. There are some problems surrounding the question of nurses in Canada which will soon require action, and I think I can say in so far as medical profession is concerned, we would much prefer that they settle these themselves. Considerable discussion is going on at the present time with respect to the pay of nurses, their hours of duty, and also to the place of the experienced nurse. I think it is only reasonable to say that, with increased remuneration to the trained nurse, and shorter hours of duty, their clientele will become more circumscribed, and hence a wider field of usefulness will be opened for the experienced nurse. I am sure it is safe to say that almost every physician feels the necessity for the experienced nurse and I am led to believe that this is in accord with the views of many of our trained nurses, but we would like to see the work organized in association with our present nursing system. We trust that in the discussion on this subject before the Canadian Nurses Association, some scheme may be evolved whereby the practical nurse can be trained and controlled, through or in association with, our present nursing staffs.

In closing let me say to the members of our profession that a two-fold responsibility rests upon us. First, our responsibility to the public whom we serve and, secondly, our responsibility to ourselves. Let me say, more particularly, for the benefit of those who are not of our profession, that medicine is not a monopoly or a close corporation as some would have you believe. The scientific principles upon which modern medicine stands have been discovered through the arduous toil of those master minds everywhere working to ascertain the truth of those laws and forces operating in the physical world, and all we ask of those who would join us is that they conform to the well-recognized standards of medical training. As we said before, the field is so great no one can hope to master it all, but we do believe the public have a right to expect that when a man or woman presumes to treat the sick, he should be as well qualified as it is humanly possible to be. We owe it to ourselves to be more united. The constant unremitting toil of the general practitioner too often begets an isolation that renders him difficult of approach by his neighbouring confreres. We must develop more of the get-together spirit. Our local or county societies should be centres where men frequently gather for the discussion of medical problems and other matters pertaining

to the health and activities of the community in which they live. Beyond this, a keener interest must be developed in the provincial Association, so that in all questions of public health or medical legislation the voice of our profession could be heard, as it has a right to be heard, for to whom if not to us should our legislatures turn for advice on these problems; but let me say as a warning that conflict of opinion on our part will not get us very far, and while we seek thus to consolidate our interests in this province let us not forget that we are only a part of the national organization. Through the Canadian Medical Association, we should seek by every means to cement the ties that bind us to our colleagues in the other provinces. Let us forget the boundaries that may divide us and endeavour to build up in this new land a profession nation-wide in its compass, universal in its thought, and worthy in every way of the best traditions of the great body to which we belong.

In compliance with a request from the Dominion Government, Hon. W. D. McPherson, Provincial Secretary of the Ontario Legislature, has introduced a new Registration Act affecting births, marriages and deaths. According to the provisions of the new Act, it is incumbent on every nurse, doctor, clergyman, undertaker or any other person to supply the Registrar-General with such knowledge relating to births, marriages or deaths as may be desired by him. Division Registrars, in future, must send in their reports monthly, rather than quarterly as heretofore, and, in case Registrars have no returns, they must report the fact. If the Division Registrar is not properly advised of a birth, marriage or death, he must notify the persons responsible for the neglect, and if the neglect continues for over seven days, the Registrar-General must be notified of the fact. All registrations must now be made by the parent or guardian. Births at sea, where the mother is on her way to Canada, or births across the border in hospital may, henceforth, be registered in Ontario, and in case of a still birth, the birth must be properly registered before the burial permit is issued.

THE ALBUMINURIA OF PREGNANCY

By Edward P. Davis, A.M., M.D., F.A.C.S.

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WHEN you did me the honour to ask me to prepare a paper for this Association, the suggestion was made that the topic albuminuria of pregnancy be chosen, and it is with great interest and pleasure that I venture to discuss this important subject with you this evening. I may perhaps set forth clearly what I mean by the albuminuria of pregnancy by the narration of a case.

A woman aged thirty, in her second pregnancy, was admitted to the Maternity Department of the Jefferson Medical College Hospital, evidently in the ninth month. The contour of the abdomen was unusual and a provisional diagnosis of twin pregnancy was made. There was marked general œdema and while the patient was not ill she expressed herself as not feeling in the best of health. There was no headache, nausea, nor vomiting, constipation to a moderate degree, and no disturbance of vision. Examination of the urine showed serum-albumen in great abundance, no casts except a few faint hyaline ones, a high percentage of urea, no sugar, no acetone and no diacetic acid. The pulse tension was 140, and while there was some congestion at the bases of the lungs, the thoracic organs were otherwise healthy. As the patient seemed fatigued she was put to bed, given laxatives and milk and soft diet and very shortly labour developed with the birth of twin children. The œdema and albuminuria speedily disappeared. This case illustrates, I think, what is meant by the albuminuria of pregnancy. The most rational explanation of the condition is mechanical pressure undoubtedly interfering with the circulation of the kidneys and also the exit of urine and the increased metabolism incident to twin pregnancy. The condition is not one of gravity and should occasion no anxiety in the mind of the physician. It is to be distinguished from more serious conditions by a thorough study of the urine, accurate observation of the pulse tension and, if possible, by an expert examination of the eye grounds.

But I apprehend that under the term albuminuria of preg-

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nancy you may have had in mind a more serious condition frequently culminating in eclamptic convulsions. May I then discuss with you this more complex and interesting topic.

Out of the mass of theories and conflicting clinical observations concerning the pernicious nausea and vomiting of early pregnancy, and the albuminuria and eclampsia of later pregnancy, there have come some facts proven by clinical observation which may give us a comparatively clear picture of these important conditions. Under the term toxæmia of pregnancy, obstetricians of to-day include pernicious nausea and vomiting, albuminuria and eclampsia and other complications. Is there a common factor running through these various phenomena whose recognition may aid us in their interpretation?

The term metabolism, while illustrating the fact that language is used to confess ignorance, or conceal ideas, still indicates processes connected with nutrition and excretion. Before the placenta is fully formed, there is evidently a biological struggle between the embryo and the mother. The abundant growth of syncytium with free proliferation of chorionic villi and their discharge in buds into the mother's blood stream threaten to overcome the immunizing properties of her blood and expose her to the danger of the acute poisoning known as toxæmia. This manifests itself in early pregnancy, and sometimes in later pregnancy as well, by persistent nausea with or without vomiting, inability to maintain and assimilate nourishment, progressive weakness and finally death from exhaustion. The clinical picture is sufficiently familiar to require but brief mention. In these cases, albuminuria cuts but a small figure. A nitrogen partition of the urine shows clearly a disturbance in nitrogenous metabolism. Microscopic study of the blood reveals the fact that the red cells are undergoing extensive disintegration and that the colouring matter of the blood is being lost in various ways. While the urine may contain albumen and casts, these are not present in large quantities and are often absent. Blood pressure and pulse tension are usually less than normal.

After the formation of the placenta the mother as a rule is spared to great extent the danger of the excessive growth of fœtal elements and her perils are transferred to another process, namely that of nutrition and excretion both for herself and for the growing fœtus.

I need scarcely remind you of the fact that we are ignorant of the cause of the toxæmia of later pregnancy. It evidently results from a process which does not cease when the child leaves the uterus,

for the mother may pass through acute toxæmia with or without convulsions, without expelling the child, and again acute toxæmia may reach its highest point after the uterus has been emptied. That this process has to do with pregnancy is undoubted, for it does not occur in the non-parturient.

Without attempting to establish definite different classes of toxæmia in later gestation we may mention three groups which are fairly distinct in their clinical manifestations. First and most common the nephritic albuminuric type. Second, and less common, the hepatic variety; third, and infrequent, that which is caused by failure in the ductless glands to perform their function, or by exaggerated function, notably the thyroid gland.

All of these occur in individuals in whom metabolism is in some way faulty. In some a gouty tendency is present. In others there is habitual lack of normal action in one or more of the important digestive organs. In others the thyroid gland is evidently abnormal in its function. Women who first become pregnant when considerably over the average physiological age for reproduction, are apt to develop this complication. While there is no positive proof that one attack, or that one experience of this abnormality, confers immunity against others, women who in their first pregnancy pass through acute toxæmia often escape in later gestation.

In the more common nephritic variety the most prominent symptom is serum albuminuria, and as the detection of serum albumen in the urine is very easily accomplished this fact has given the name albuminuria of pregnancy to the acute toxæmia of pregnancy of the nephritic variety. The classical fable of the general practitioner who boils some of the patient's urine in a spoon over the flame of a candle and makes a diagnosis of impending convulsions, illustrates the old and common conception of the albuminuria of pregnancy.

An accurate diagnosis of this condition is made by an examination of the urine which reveals the presence of serum albumen in considerable quantity. A slight serum albuminuria is often seen in healthy individuals. Accompanying this there is some alteration in the percentage of urea and in the nitrogenous metabolism, for the nitrogen partition of the urine will show increased creatin and creatinin, rest nitrogen, and often ammonia. Indican is not infrequently present in large quantity. Sugar, acetone, and diacetic acid are usually absent. Casts of all varieties are abundantly in evidence. The quantity of urine is greatly diminished, its

specific gravity much increased. Its colour may be considerably darkened and it may resemble the smoky urine of acute nephritis. Pulse tension will be above 140 and may rise as high as 220. The aortic sound of the heart is often sharply accentuated and the cardiac impulse is strong and heaving. There is obstinate frontal headache, often impairment of vision, sometimes with the sight of particles of fire before the eye. The patient may be dull and apathetic, or irritable and excitable. Local or general œdema is frequently observed. The tongue is usually foul and heavily coated and obstinate constipation is frequently present.

The natural history of this condition is to proceed to an explosion of nervous energy. This commonly manifests itself in tonic and clonic convulsions which are typically epileptiform in character.

In other cases known as eclampsia without convulsions, the patient is suddenly seized with violent nausea, vomiting and severe headache, disturbance of vision, high pulse tension, scanty urine whose contents have been enumerated. While convulsions may not occur, the cerebrum is profoundly disturbed and cerebral œdema or hæmorrhage may develop. In some cases hæmorrhage from the mucous membrane of the stomach or bowel or hæmorrhages beneath the skin are observed. Eclamptic convulsions, or a profound disturbance of the nervous system which occurs without convulsions, may produce an eliminative crisis. Oftentimes labour develops the uterus contracts strongly and expels its contents. This is accompanied by hæmorrhage, by marked fall in pulse tension, sweating, relaxation and increased secretion of urine. In other cases the emptying of the uterus produces no improvement. Whether the crisis comes with or without labour, if the course of the disease be favourable, phenomena resembling lysis develop. Profuse sweating, evacuation of the bowels, increased secretion of urine, lessened pulse tension, cessation of headache, improvement of vision and gradual return to a comparatively normal state are observed. In some cases lysis does not occur, but the explosion of energy in the nervous system results in minute hæmorrhages into the substance of the important viscera as the lungs, the liver, spleen, kidneys and brain, pulmonary œdema develops acute cloudy swelling of the heart muscle, cerebral œdema and hæmorrhage, paralysis of the heart, cardiac, and respiratory centres, and death from exhaustion.

The pathology of this condition has been simply sketched in the preceding statements. Autopsy reveals the kidneys greatly engorged, alterations in the lobules of the liver and often in the

substance of the spleen, lungs, and brain. The fœtus shares in the mother's disease and its organs when examined show lesions corresponding to hers. The process is evidently a poisoning, but of the exact nature of the poison we remain at present in ignorance.

In the hepatic variety of the acute toxæmia of pregnancy, albuminuria is absent or present in but trivial degree. There are no casts except a few hyaline. Blood pressure is often subnormal. The temperature is also subnormal. There is no severe headache, the patient is apathetic, the tongue is dark in colour and dry, the urine scanty and very often slight jaundice is observed. Albumen and casts as has been said may be absent. A nitrogen partition, however, will reveal a greatly diminished urea, increased creatin and creatinin, rest nitrogen and ammonia, and high indican percentage, and frequently acetone and diacetic acid. A predominant feature in these cases is the disintegration of the blood and a tendency to oozing hæmorrhage into the viscera or petechial hæmorrhages beneath the skin. Such patients may have convulsions, or may develop pernicious nausea, or may die by exhaustion without an explosion of nervous energy. The diagnosis of the condition is made by a general physical examination and by the nitrogen partition of the urine.

In the thyroid type of toxæmia the thyroid gland is evidently altered in substance and structure, exophthalmos may be present, the pulse is frequently rapid, pulse tension may be increased or lessened. There is a history of hyper- or hypo-thyroidism often dating from the beginning of menstruation. If the patient has passed through a previous pregnancy and labour, she will give a history of great disturbance, excitement and dyspnœa when labour pains began. An examination of the urine may reveal a moderate albuminuria and a few hyaline casts and nitrogen partition will show no great variation from the normal.

Cases of thyroid toxæmia are especially dangerous at the incidence of labour. Great disturbance of circulation and pronounced dyspnœa usually occur. So severe may be the disturbance that the obstetrician may elect to deliver the patient in such a manner as to avoid the usual phenomena of labour and uterine contraction.

What can be done to prevent so serious a complication of pregnancy? Unquestionably this is to-day the most deadly and unmanageable menace to the life and health of mother and child which confronts the obstetrician.

Under the term hygiene of pregnancy should be included a thorough, intelligent and patient observation of the pregnant

woman. This is impossible without her co-operation, hence the education of the laity in this matter is of great importance. It is not sufficient to examine specimens of urine at intervals of three or four weeks, but the patient should be seen at least every two weeks during pregnancy and her actual physical condition accurately ascertained. A thorough examination of the urine, including a nitrogen partition, if suspicious symptoms arise, is imperatively necessary. So the repeated taking of the pulse tension is a wise precaution. As regards the actual prevention of this condition, one naturally thinks of the patient's food and then of her ability to assimilate this food and excrete her own waste products and those of the fœtus. The ideal food for the pregnant woman is comprised of milk, fruit, and bread, and unquestionaby the avoidance of considerable quantities of highly nitrogenous food is the greatest preventive for the acute toxæmia of later gestation. It is often impossible to accurately ascertain what the patient really eats unless some intelligent caretaker be with her. A patient should receive from her physician a clearly stated and plainly written or printed memorandum of hygiene in which suitable articles of diet are emphatically named and equal stress is laid upon these things which the patient should not eat. In giving such directions, one must naturally have reference to the patient's circumstances and to the possibility of her obtaining proper food.

It is also of paramount importance that the bowels should act regularly and freely, that the patient drinks at least one quart of good water in twenty-four hours, that the action of the skin be stimulated by bathing and by the wearing of proper clothing during the colder portion of the year, that abundant fresh air and exercise be afforded and that the patient lead a hygienic life. These simple matters seem to the patient trivial and it is difficult to get women to take them seriously. But unquestionably strict adherence to such simple precautions will prevent in the majority of cases this dangerous and distressing complication of pregnancy. Possibly the mother may be stimulated to co-operate with the physician if she be told the truth that if she becomes ill, her child will share her illness and probably die. We are aware of the fact that the scientific men who are working to lessen cancer are disseminating knowledge of the first symptoms of cancer in women by posting in rooms frequented only by women a brief, simple description of the first signs and symptoms of cancer. Why would it not be proper and well to give information concerning symptoms of threatened acute toxæmia to pregnant women?

There is no drug which can be relied upon as a specific against the acute toxæmia of later pregnancy, but those remedies which stimulate elimination are exceedingly valuable. Should the patient grow steadily worse, there will come a time when evidently the explosion of energy in the nervous system is threatened. This we believe to be the critical period in the case. While convulsions cause the patient alarm and while they terrify her relatives and friends, they are not the all important element in the case. A patient has recovered who had more than a hundred convulsions and many have died who had none. But these cases should be recognized in many instances before convulsions occur and then is the golden opportunity for treatment.

Three methods of treatment out of the many proposed in the past have had some measure of success. We recently have had a revival of the argument to terminate pregnancy in these cases at the earliest possible moment when symptoms threaten or convulsions develop by delivering the patient by abdominal or vaginal Cæsarean section. This proposition is exceedingly attractive to the obstetric surgeon, and is prompt and efficient so far as the emptying the uterus is concerned, but does not aim at the acute toxæmia which is present, and hence the operator must not be surprised if the anæsthetic and the surgical manipulation increase rather than lessen the toxæmic condition present. Nor are we surprised to learn that in a large series of cases so treated the maternal and fœtal mortality was greater than those subjected to other methods of treatment. It has been clearly shown that immediate delivery, whether by the slower and more violent method of forced vaginal delivery, or by the rapid and comparatively easy method of abdominal or vaginal section does not show the best results for mother and child.

We do not, however, mean to assert that there are no cases in which prompt delivery by section is not indicated, and to this point we shall return later. Another method of treatment which has long been used and has been recently brought into prominence by Stroganoff, of Petrograd, is the treatment by narcotics and sedatives. This may be termed the home treatment of acute toxæmia or eclampsia, in contrast with the treatment in hospital, and consists in isolating the patient from disturbing influences, in the free use of morphine, bromides and chloral, in the careful avoidance of all disturbance of the generative tract and in no interference unless labour begins and halts, when it may be terminated by an easy vaginal delivery. The statistics of a considerable number of cases so treated are favourable to the success of this method, but

the method cannot be said to be superior to that which aims to secure immediate and thorough elimination as the basis of intelligent management. The sedative treatment is particularly applicable for the general practitioner who cannot take his patient to a hospital and who has not the experience, appliances and assistance necessary for more thorough, vigorous and successful management.

The third method of treatment for the acute toxæmia of later pregnancy, with or without convulsions, is aimed at elimination as the ground work of success. This treatment can be carried out most successfully in hospitals, or, if this is impossible, a hospital must be improvised in the home of the patient. If the patient be not unconscious and in convulsions, she should be lightly anæsthetized with nitrous oxide and oxygen. A vein in the arm should be opened and from sixteen to twenty-four ounces of blood withdrawn and an equal quantity of normal salt solution introduced. The stomach should be thoroughly irrigated with warm bicarbonate of soda solution and from two and one-half to five grains of calomel and soda should be poured through a tube into the stomach and allowed there to remain. The large intestine should be thoroughly irrigated with two gallons of hot salt solution. The patient should be catheterized and the urine thus obtained thoroughly examined. The patient should be placed between blankets, the skin cleansed with soap and warm water, hot water bottles placed to the feet and a dry ice cap upon the head and an abundance of fresh air should be secured. Should convulsions occur, a soft pad should be placed between the teeth to prevent the biting of the tongue. No effort should be made to control the convulsions by narcotics or anæsthetics. In from two to four hours, the irrigation of the intestine should be repeated. In from six to eight hours the patient will be better or worse. If she is a multipara and the cervix be soft and dilatable, the membranes may be ruptured and the patient will gradually come into labour. If she be a primipara with a cervix unshortened, long and resisting and eliminative treatment for six or eight hours shows no improvement and the child be living and in good condition, she may be delivered by abdominal Cæsarean section. Under no other condition, however, should section be done. If labour develops and halts when conditions are favourable for vaginal delivery, labour should be terminated by forceps or version, but labour should not be induced nor should the accouchement forcé be employed. No radical procedure should be undertaken in the interests of the child, for it must be remembered that the fœtus shares the mother's toxæmia and, although it may be

born alive, in the majority of cases death will occur from toxæmia within two weeks' time. In cases where there is great restlessness and excitability, the very moderate use of morphine hypodermically may be permitted, but the essential element in the treatment is rapid, thorough, persistent elimination and nothing must be done to interfere with this. When acute toxæmia, with or without convulsions develops after labour the treatment is the same. Bleeding should be done without reference to pulse tension, but with regard to the evident severity of the toxæmic process which is present.

After delivery, two dangerous complications threaten, the first is pulmonary œdema accompanied or followed by extravasation of blood into the alveoli of the lung, rapidly developing fever, cyanosis, cerebral œdema and death. The first tendency to pulmonary œdema calls for the prompt and free use of dry cups, the hypodermic administration of strychnia, digitalis and atropin and the free use of oxygen. By these means promptly and vigorously used, some of these cases may be saved. The second complication is that of acute cerebral disturbance, usually in the form of mania. This requires restraint, sedatives, isolation, elimination and often the removal of the patient to a hospital for mental diseases.

Care must be taken never to give a prognosis in a case of acute toxæmia in later gestation. Fully two weeks must elapse after the storm is over before the patient can be said to be safe. Pulmonary œdema and lung complications may develop at any time within that period and prove fatal. After the patient has apparently recovered she must be observed for at least a year to ascertain that nephritis does not develop and become chronic. So soon as the patient can swallow she should be given milk and water in equal parts as freely as she will take it. When she can swallow readily, salts, as freely as she can take it, may be given to advantage for several days until the patient's bowels move very copiously and she is thoroughly saturated with the saline.

The treatment of the hepatic variety of the acute toxæmia of pregnancy is essentially the same as that just described. It may seem irrational to bleed a patient with low pulse tension, but we do not bleed without following this by intravenous saline transfusion, and we do not bleed for pulse tension, but for the toxæmic condition present.

In thyroid cases a cautious trial may be made during pregnancy of thyroid extract and often the patient's condition may be considerably improved. Labour must be avoided and in the experience of the writer the patient should be delivered by elective Cæsarean

section as near term as possible. This avoids the dyspnœa and the great general disturbance which labour produces in these patients.

The treatment of an infant born of a toxæmic mother consists in copius irrigation of the intenstines, warmth, the free administration of water, predigested milk and thorough and frequent cleansing of the skin. The prognosis in these cases is doubtful or grave.

I cannot close without calling your attention to one of the most serious complications of the acute toxæmia of late gestation accompanied by albuminuria and high pulse tension. I refer to accidental separation of the normally implanted placenta. May I again illustrate this by a recent clinical experience. A multipara was brought to the Maternity Department of Jefferson Hospital with indefinite pain in the uterus, disturbance of pulse, moderate headache, and moderate œdema of the lower extremities. On examination the uterus was hard and tender, pulse tension 180, the urine contained serum, albumen, and casts in abundance. The fœtal heart sounds could not be heard clearly, but were possibly detected as faint and irregular. The patient was very desirous of saving the child. She arrived at the clinic hour, was immediately taken to the clinic, anæsthetized with nitrous oxide and oxygen, and I delivered her by abdominal Cæsarean section while an assistant bled and transfused. The placenta was found partially separated. The uterus contained considerable clotted blood. The child was, fortunately, living and survived. While the patient was on the operating table the stomach was copiously washed out and calomel and soda left within. On her return to the ward, she was treated by the continuous instillation of sodium bicarbonate solution by the drip method. Her headache and uncomfortable symptoms were at once relieved and she made, with her child, an uninterrupted recovery. Successful lactation developed.

May I ask you to disassociate the acute toxæmia of pregnancy of the nephritic, hepatic or thyroid variety from inevitable convulsions and also inevitable labour. It has been my experience to see patients under active treatment weather the storm of toxæmia without convulsions and subsequently give birth to living children. But a few days ago a Spanish woman in a condition of great filth and neglect was brought to the Maternity Department of the Jefferson Hospital in violent convulsions. Under the treatment described, she was made to eliminate, her convulsions ceased and she became conscious after passing through several days of great mental excitement. Perhaps two weeks after this storm had ceased, she gave spontaneous birth to a living and vigorous child.

FOCAL INFECTION AND CHRONIC URTICARIA

By Hugh MacKay, M.D.

Winnipeg

BY general consent, both of the profession and of the laity, the usual causative factor in this distressing disorder is hypersusceptibility or sensitization to certain foodstuffs. When these articles of diet are ingested, the characteristic outbreak in the skin supervenes. While the phenomenon is accorded universal recognition, the modus operandi in its development is not set forth in the literature in standard works on dermatology.

In the judgement of the writer, the majority of these patients, perhaps all of them, are sensitized because they are infected, and when the foci of infection are located and eradicated, the sensitization to these particular foods ceases to exist. The case histories of the patients exhibited this evening are calculated to buttress this hypothesis from the clinical side. In these chronic cases, certain common characteristics are frequently observed marking the evolution of the affection. Beginning with a few superficial, scattered, evanescent lesions, the disorder grows progressively worse, becomes more widespread, is characterized by great chronicity, shows no disposition to spontaneous cure, and with the lapse of time, lesions of the giant urticarial or angio neurotic œdema type are interspersed with those of the common and more innocent variety. Invasion of the mucous membrane of the mouth is usually a late accompaniment of the disease and should always be viewed with apprehension, since œdema of the glottis, with serious and even fatal outcome may eventuate. A disorder capable of giving rise to so much mischief challenges our attention and calls for a more sympathetic attitude in the profession at large, towards this class of sufferers, than has hitherto been evidenced.

The orthodox methods of therapeutic attack in these pathological conditions are notoriously inadequate. In the effort to achieve something of more lasting benefit, several cases have been under review in my clinic in the General Hospital and in my private

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practice, which have been studied and treated from the viewpoint of a possible infection. Efforts have been directed towards removing probable foci of absorption, and observations have been made as to the clinical value of autogenous vaccines administered for the relief and cure of the disease. The patients exhibited this evening demonstrate the results of this line of treatment.

Case 1. Mrs. K., age thirty-six, chronic urticaria of five years' duration, with angio neurotic œdema symptoms. No interval of complete freedom during these years; semi-invalided in consequence of dietetic restrictions, physical discomfort and mental disquietude and unrest. The teeth were overhauled without relief. Recurring attacks of tonsilitis were noted, both antedating and during the continuance of the eruption. The tonsils looked normal, but the history, I thought, warranted their removal. Patient was told frankly it was an experiment, but she requested a trial of the method. Tonsillectomy was performed in January, 1917, by Dr. George Fletcher. Several subcutaneous injections of an autogeneous streptococcic vaccine from the tonsil were given. Improvement was gradual. It took four or five months for the skin to clear up. Since then there has never been a trace of the lesions. The trail of their comings and goings is obliterated. The patient is on unrestricted diet, and has completely regained her usual health and strength.

Case 2. Mr. P., age forty-three, urticaria developed June, 1917; came under observation February 18th, 1918. There have been no entire cessations of the characteristic expressions of the malady since the initial invasion, with the exception of a few days in September, 1917, when he was obliged to take a holiday to avoid a breakdown in his health. The efflorescence immediately recurred when he went back to work. He had rheumatism with purpura in 1901 and again in 1902. On July 28th, 1917, Dr. Washington removed the tonsils. Considerable improvement in the skin condition ensued, angio neurotic œdema symptoms were still present when he came under my care in February, 1918. *X*-ray examination of the teeth revealed multiple rarefied areas. These were cleared up by extraction of the affected teeth. An autogenous streptococcic vaccine from the teeth was administered. In six months the lesions had all faded away. He has had no further outbreak. He denies himself nothing in the way of diet. Convalescence seems fully established.

Case 3. Mr. M., age nineteen, eruption appeared ten years ago and has persisted practically ever since. The teeth showed

probable areas of infection, in consequence two of them were removed, with no apparent benefit. As a history of frequent attacks of tonsilitis was elicited, Dr. Washington removed the tonsils on January 30th, 1919. A mixed vaccine was prepared from the tonsils, and small doses were injected at weekly intervals. Gradual improvement took place. He is still under observation and treatment.

Conclusions

1. These infections are usually from multiple foci, and generally in the buccal cavity.

2. Where the teeth are the source of trouble, information furnished by the *x*-ray is indispensable to a proper appreciation of the pathological state.

3. To meet with success, operative interference must be thorough and far-reaching. Slipshod methods invite failure.

4. Exacerbations in the efflorescence have frequently been observed immediately following the removal of septic foci.

5. In recent infections, the removal of the focus alone has been followed by symptomatic cure.

6. In chronic cases, the vaccines appear to be of service in hastening resolution and building up immunity. They should be exhibited with caution, since anaphylactic phenomena are specially prone to appear in the victims of this distressing disorder.

7. In urticaria, an interval of from three to six months should be allowed after removal of foci before a symptomatic cure may be confidently looked for and the maximum amount of benefit derived.

My thanks are due Dr. Boyd of the pathological department, and Dr. McMillan of the *x*-ray department, for their co-operation in carrying on these studies.

AURICULAR FLUTTER AND ITS TREATMENT

By Jonathan Meakins, M.D.

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AURICULAR flutter is a specific form of auricular tachycardia in which the auricular rate is over 200 per minute, and frequently in the region of 300 per minute. There is associated with this a partial heart-block; consequently the ventricular rate may be one-half, a third, or even less than a fifth the rate of the auricle. The pulse is not necessarily regular, in fact it is frequently irregular, which is due to the ventricle responding to an irregular ratio of the auricular contractions. It is quite distinct from auricular fibrillation, although there is a close relationship between them. Its distinction from auricular tachycardia of a slower rhythm is more or less arbitrary, but it is essential, until more is known concerning the pathology of all forms of auricular acceleration.

Auricular flutter is much commoner than is usually thought. The reason being that thorough systematic examinations are not made on all cases of constant or intermittent tachycardia. The more diligently this condition is looked for, the more often is it found.

It may be recognized in a variety of ways. The most conclusive method of recognition is by the electro-cardiograph. Here there is usually found a complex of distinctive characteristics. The auricular deflections are pronounced, and follow each other in rapid succession with scarcely any interval. In fact it is only in the slow rhythms of auricular flutter (200-240) that any interval is appreciable. The ventricular complex is of normal type, and is usually superimposed upon an auricular complex. Where there is a two to one heart block, the occurrence of auricular flutter may pass unrecognized, as every other auricular complex is buried in the ventricular deflection. Pressure on one or other vagus will, as a rule, reveal the condition by increasing the ratio of the heartblock and thus slowing the ventricle rate. This affords a ready method of detecting auricular flutter in cases of tachycardia. It is not absolutely diagnostic, but in cases where pressure on the vagi

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definitely slows the pulse rate auricular flutter may be suspected. Polygraphic tracings are of great value in detecting this condition, information being obtained by the study of both the venous and radial tracings.

Venous curves. The character of the venous curves will depend upon the ventricular rate. When the ventricular rhythm is slow, particularly where complete heart-block is present, the auricular waves appear prominently between the ventricular waves. On the other hand, when the rate of the ventricle is rapid and there is a 1–1 rhythm or 2–1 heart-block, the venous tracings may be very misleading. Under these circumstances a ventricular form of venous pulse is present, and the auricular waves are obscured by the ventricular waves.

Arterial curves. The arterial waves may be regular or irregular. If the former, considerable difficulty may be experienced in making a diagnosis, particularly when the rate is rapid. If the arterial pulse beats are slow and regular, slight exercise will frequently exactly double the arterial pulse by changing a 4–1 to a 2–1 block. If the change of the heart-block occurs irregularly, then an irregular pulse will result. By careful measurements of the arterial pulse intervals, during these irregular periods, and by comparisons of groups of them, a diagnosis may be arrived at. Lewis has outlined this procedure in considerable detail.

Symptoms. The outstanding feature of this condition is tachycardia. This may be present week in and week out, for long periods. As a rule, however, it is intermittent, occurring after exertion of more than a limited amount. During periods of rest, the ventricle may return to about the normal rate. The auricular rate does not change more than a few beats per minute over very long periods of time. Cases are reported where it has remained constant for years. If the ventricular rate remains slow, no untoward symptoms result. But during the periods of rapid ventricular rhythm, great distress may be experienced, such as dyspnœa, orthopnœa, palpitation and weakness. If the rapid ventricular rhythm persist, signs of cardiac failure gradually appear, such as enlargement of the liver, passive congestion of the lungs, ascites, œdema and cyanosis. The duration of the rapid ventricular rhythm will determine the severity of the symptoms of failing compensation, and if it persist long enough, the patient's condition gradually passes into one of extreme gravity.

Auricular flutter usually occurs in patients over the fortieth year, although a few cases have been reported under this age.

It occurs three times as frequently in men as in women; as a rule, the women are younger than the men. Evidence of an endocardial lesion is not the rule, but is more frequent in women than in men.

Treatment One of the most important points about auricular flutter in so far as the patient and the physician are concerned, is the good results which may be obtained through proper treatment. This consists of the use of digitalis in large doses until auricular fibrillation occurs, and then if the digitalis be stopped, the tendency is for the normal rhythm to return. Failure of cure is usually due to one of three causes. First, intolerance of digitalis by the patient; second, cessation of treatment at too early a date; and third, inability to produce fibrillation before toxic symptoms appear even when the digitalis is tolerated in large doses.

I will give in detail several cases to show the method of treatment and probable causes of faliure.

Case 1. Mrs. H., aged fifty-three, housewife. She had chorea at six years of age, and rheumatic fever at forty-three and fifty-two. She had always had to work hard, and had had six children. Following the attack of rheumatic fever at forty-three, she complained of dyspnœa and palpitation. In 1912, she was admitted to the Royal Victoria Hospital with acute polyarthritis. The pulse was 92, regular and of good volume. Blood pressure systolic was 100 Mm. Hg. The cardiac dulness was 3 cm. and 10 cm. to the right and left of the midsternal line. There was a presystolic thrill, and a presystolic and systolic murmur with a snapping first sound at the apex. The patient was discharged improved. In May, 1914, she was readmitted to hospital with precordial pain, dyspnœa, palpitation, cough and anuria. A polygraphic tracing was taken, and the diagnosis made of probable auricular flutter. She was discharged improved with instructions to return in a month for observation. She returned in two months complaining of precordial pain, dyspnœa, palpitation, cough, anuria, œdema, ascites and enlarged liver. The cardiac dulness was 5 cm. and 12 cm. to the right and left. Auscultatory signs were unchanged. Pulse was 145 per minute. The record of the pulse rate and treatment are given in Table I.

TABLE I

Date	Method of examination	V's Rate	A's Rate	Digitalis given daily	Remarks
Sep. —, 1912	Pulse count.	92	..	.....	Pulse regular.
June 12, 1914	Polygraphic.	60	280	.....	Irregular 2 : 1 heart-block with 4 : 1 and 5 : 1 periods—some rapid periods—pressure on rt. vagus slows pulse conspicuously.
July 28, 1914	Electrocardiographic	145	290	Tinct. m. cxx.	Pressure on rt. vagus slows pulse to 90 irregular 4 : 1 heart-block.
July 31, 1914	Electrocardiographic	97	290	Tinct. m. cxx..	Irregular 2 : 1 heart-block and 4 : 1 periods.
Aug. 4, 1914	Electrocardiographic	73	290	Tinct. m. lx...	Regular 4 : 1 heart-block.
Aug. 5, 1914	Pulse count.	48	..	Tinct. m. xlv..	Regular—Probably 5: 1 heart-block.
Aug. 8, 1914	Electrocardiographic	50	Fib'n	Stopped.....	Irregular pulse.
Aug. 17, 1914	Electrocardiographic	60	Fib'n	.....	Irregular pulse.
Aug. 26, 1914	Electrocardiographic	89	89	.....	Irregular pulse due to ventricular extrasystoles.
Mar. 18, 1919	Electrocardiographic	80	80	.....	Regular pulse.

This patient was given a little over seventeen drachms of the tincture digitalis in the course of ten days before auricular fibrillation was induced. Since the return of normal rhythm on August 26th, 1914, she has had no symptoms indicative of paroxysmal tachycardia, and in spite of her endocardial lesion she is leading a useful and comparatively comfortable life.

Case 2. J. R., male, aged sixty-two, gate-keeper. For many years he had taken alcohol to excess. No venereal or rheumatic history. During the fall of 1911 he began to suffer from dyspnœa and palpitation. On March 1st, 1914, he suddenly became much worse and soon suffered in addition from orthopnœa, œdema, and ascites. He was admitted to hospital on September 13th, 1914.

Examination of the heart showed it to be rapid and irregular in rhythm. The transverse cardiac dulness measured 17 cm. and there was a faint systolic murmur at the apex. Radial arteries were thickened and the systolic blood pressure was 100 Mm. Hg.

A record of the cardiac rate and treatment is detailed in Table II.

TABLE II

Date	Method of examination	V's Rate	A's Rate	Digitalis given daily	Remarks
Oct. 9, 1914	Electrocardiographic	120	300	.....	Irregular—2 : 1 heart block with 3 : 1 and 4 : 1 periods.
Oct. 10, 1914	.....	..	..	Tinct. m. cxx..	.....
Oct. 11, 1914	.....	..	..	Tinct. m. xc . .	.....
Oct. 16, 1914	Electrocardiographic	73	293	Tinct. m. xc . .	Regular 4 : 1 heart-block
Oct. 22, 1914	Electrocar-	80	Fib'n	Stopped.....	Irregular....
Oct. 25, 1914	Eletrocardiographic	83	300	Tinct. m. xc . .	Irregular 3 : 1 heart-block with 4 : 1 periods.
Oct. 28, 1914	Electrocardiographic	79	Fib'n	Tinct. m. xc . .	Irregular.
Oct. 30, 1914	Electrocardiographic	75	300	Tinct. m. xc...	Regular 4 : 1 heart-block.
Nov. 2, 1914	Electrocardiographic	80	Fib'n	Tinct. m. xc . .	Irregular.
Nov. 6, 1914	Electrocardiographic	72	72	Stopped.....	Irregular—premature auricular beats.
Mar. 17, 1919	Electrocardiographic	80	80	. . . . .	Regular.

This case was most resistant to treatment. It is true that auricular fibrillation was induced after approximately the same amount of digitalis as in the first case. But it is a striking example of a number of cases which revert to the rhythm of flutter instead of to a normal rhythm. It is necessary under these circumstances to continue the treatment with digitalis inducing fibrillation repeatedly until the normal rhythm predominates again. In this case it was necessary to do this three times. The periods of fibrillation were comparatively short, apparently lasting about thirty-six hours, except the last which persisted for four days and then gave place to a normal rhythm. This has remained constant apparently, and after four years the patient states he has had no return of the symptoms of tachycardia.

Case 3. M. F., male, aged sixty-six, retired banker. This patient was in hospital on many occasions for various surgical conditions and operations, between November, 1912, and June, 1915. In March, 1914, it was first noted that he had an irregular pulse "probably due to extra-systoles." He returned to hospital in October, 1914, suffering from an accidental gun-shot wound of the back. He complained of having been troubled during the past few months with palpitation, dyspnœa and precordial oppression. The pulse was irregular, and on December 13th, 1914, an electrocardiographic tracing showed numerous premature auricular beats and ventricular extra-systoles. On December 20th, 1914, the pulse rate suddenly increased to 156 per minute and another tracing revealed an auricular tachycardia probably due to auricular flutter. He was discharged from hospital without special cardiac treatment. He returned on June 13th, 1915, with an irregular pulse rate of 140, and was operated upon for inguinal hernia. He stood the operation well, and on July 9, was readmitted for cardiac treatment.

In Table III, a detailed account is given of the cardiac rate and rhythm over a period of four years, with a synopsis of the digitalis treatment.

TABLE III

Date	Method of examination	V's Rate	A's Rate	Digitalis given daily	Remarks
Dec. 19, 1913	Pulse count.	76	..	.....	Regular.
Mar. 25, 1914	Pulse count.	80	..	.....	Irregular, extra-systoles .
Oct. 16, 1914	Pulse count.	90	..	.....	Irregular, extra-systoles.
Dec. 13, 1914	Electrocardiographic	78	78	.....	Irregular—numerous premature auricular beats and ventricular extra-systoles—Displacement of normal pace-maker over short periods
Dec. 21, 1914	Electrocardiographic	156	312	.....	Regular 2 : 1 heart-block.
June 13, 1915	Pulse count.	140	..	.....	.....
July 9, 1915	Electrocardiographic	156	312	.....	.....
July 10, 1915	Pulse count.	128	..	Infus dr x ..	Irregular.
July 12, 1915	Pulse count.	100	..	Infus. dr. xx...	Irregular.

TABLE III.—*Continued*

Date	Method of examination	V's Rate	A's Rate	Digitalis given daily	Remarks
July 20, 1915	Pulse count.	72	..	Infus. dr. x....	.....
July 24, 1915	Pulse count.	76	..	Infus. dr. vi..	.....
July 28, 1915	Pulse count.	72	..	Infus. dr. x....	.....
July 30, 1915	Electrocardiographic	78	312	Infus. dr. x....	Irregular 4 : 1 heart-block—ventricular extra-systoles.
Aug. 31, 1915	Pulse count.	70	..	Infus. dr. x....	Discharged, no graphic evidence of disappearance of rapid auricular rate.
Sep. 13, 1915	Pulse count.	120	..	.....	Irregular.
Sep. 17, 1915	Electrocardiographic	78	312	.....	Irregular 4 : 1 heart-block with 2 : 1 and 3 : 1 periods.
Sep. 27, 1915	Pulse count.	152	..	Tinct. m. xlv..	Regular—probably 2: 1 heart-block.
Oct. 5, 1915	Electrocardiographic	70	Fib'n	Tinct. m. xxx.	Irregular.
Oct. 12, 1915	Pulse count.	76	..	Tinct. m. xxx..	Discharged—no graphic evidence of disappearance of rapid auricular rate.
Nov. 27, 1915	Pulse count.	110-152	..	.....	Irregular.
Feb. 21, 1916	Pulse count	140	..	.....	Irregular.
July 6, 1916	Pulse count.	130	..	.....	Irregular.
July 7, 1916	Electrocardiographic	90	312	.....	Irregular 4 : 1 heart-block with 2 : 1 and 3 : 1 periods.
Dec. 21, 1916	Pulse count.	130	..	Pulv. gr. iii...	Irregular.
Jan. 6, 1917	Electrocardiographic	82	312	Pulv. gr. iii...	Irregular 4 : 1 heart-block with 3 : 1 periods.
May 15, 1917	Pulse count	140	..	Pulv. gr. 1½	Irregular.

This case had a persistent auricular flutter for about two and a half years. The condition was recognized and treatment instituted, but in spite of taking seventy ounces of the infusion of digitalis over a period of two months, no impression was made on the auricular rate. A short while later, however, auricular fibrillation was induced by comparatively small doses of the tincture. But the treatment was not persisted in until the normal rhythm was re-established.

This case is cited to demonstrate the necessity of persistent

and closely controlled treatment until the normal rhythm has definitely returned. He remained a chronic invalid for many months, due to the symptoms consequent upon periods of rapid ventricular rhythm, probably a reduction of a 4–1 heart-block to a 2–1 heart-block when the auricular rate was over 300 per minute. This patient died in 1918 of cardiac failure.

It will be seen from these cases that auricular flutter occupies a definite place in tachycardia. There is no evidence that it ever disappears spontaneously, in fact there are on record cases giving a history extending over many years. There are frequently periods of exacerbations of the general symptoms which usually follow periods of increased exertion or excitement. These are the result of a diminution in the degree of heart-block when a 4–1 rhythm gives place to a 2–1. Rest and digitalis in small doses will increase the heart block to 3–1, or 4–1; but the patient is not cured of the condition, and sooner or later, depending upon the amount of physical or mental work undertaken, the untoward symptoms will return.

If once the abnormal rhythm of flutter has been displaced by the normal rhythm, it is rare that the pathological condition returns. If it does it will be within a few days of the re-establishment of the normal rhythm. Another course of treatment will promptly repeat the cure. More than one recrudescence of flutter is extremely rare.

There are a certain number of cases in whom a cure is not possible. Amongst these are the cases who have an intolerance to digitalis, toxic symptoms being produced by comparatively small doses. There are other cases in which digitalis may be given in very large doses before toxic symptoms appear, without auricular fibrillation being produced. In such cases a complete cure is not possible. But great relief may be obtained by taking small doses of digitalis constantly, as in auricular fibrillation. The digitalis reduces the conductivity of the auriculo-ventricular node, so that a 4–1 or 5–1 heart-block may be almost constant in spite of accomplishing considerable physical exertion. Under such circumstances these patients enjoy a comparatively comfortable and useful life.

In conclusion I wish to emphasize the frequency of auricular flutter, the importance of its recognition, and the persistent treatment by digitalis under proper control until the normal rhythm is re-established or symptoms of digitalis poisoning develop necessitating the abandonment of the treatment.

NOTES ON DIAGNOSIS IN AFFECTIONS OF THE URINARY TRACT

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DIAGNOSIS in urology, as in all other branches of medicine and surgery, being all important, any contribution to this subject, which will tend towards a better understanding of its general principles, its successes and failures, should be welcomed by all, if such contribution will prove, in some small degree, of practical benefit to all concerned—patient, general practitioner or specialist.

When the practitioner undertakes the care of a patient, he assumes responsibilities that he cannot avoid; he undertakes the moral obligation to supply or to have supplied to that patient all means and mechanisms at the disposal of the profession that are necessary for securing the relief desired, and this whether the practitioner himself is capable of administering them or not. Lack of familiarity with the use of the *x*-ray machine, or failure to possess one, does not excuse him for depriving his patient of the advantages of such a machine when needed. The same reasoning applies to the opthalmoscope, the cystoscope, the bronchoscope, or any other of the equipment so useful and so often essential for diagnosis in modern medicine or surgery.

Another obvious fact is that no practitioner who undertakes the care of patients has any right to disclaim knowledge of appliances used in the various specialities and from such lack of knowledge justify himself for the often used doctrine that "Nothing more can be done" in a given case. No one has the right to make any such ex-cathedra statement, and many a patient has, doubtless, been assisted to his grave on account of it. A better, truer, and more serviceable axiom would be, "Something can always be done," and it might be remarked, most often through diagnosis.

That backwardness and inadequacy in the diagnoses of lesions of the urinary tract does exist is a fairly widely accepted fact, and it is probable that a part of the difficulty may lie in the fact that the methods and technic of genito-urinary examinations, being of comparatively recent development, are not yet altogether familiar to

the profession at large, or that these methods and technic assume formidable proportions in the perspective of infrequent use and lack of practical experience.

In ancient times, Hippocrates and Cornelius Celsus pursued logical though primitive methods in making diagnosis and applying their deductions to the treatment of urinary retention, stone and other urinary affections. About the fifteenth century, as related by Guiteras, examination of the urine was resorted to, not only by the regular practitioner and university graduate, but also by the school of quacks known as uromancers or uroscopists' These quacks would gravely inspect the urine, passed into glass flasks, and immediately guess the illness and temperament of the patient, and then base a miraculous cure thereon.

Previous to a score of years ago, investigators of the greatest acumen had to resort to and rely on the evidences then attainable in genito-urinary diseases. These consisted mainly of symptomatology, plus any external evidences which were observable, and an examination of the urine. Under the stress of necessity, urologists became most skilful in refined analysis of symptoms, weighing at its full value every deviation from the normal, either as detected by them or as related by the patient. This art of deduction doubtless reached its ultimate degree of perfection in the hands of Record, of Fournier, Guyon, Sir Henry Thompson and Ultzman. The writings of Guyon fairly scintillate with logic and acumen as they relate the diagnostic estimate to be placed on the symptoms of urinary tuberculosis, urinary lithiasis, "painful cystitis," etc. The trouble came when patients were encountered with no urinary symptoms to analyze; where kidneys were destroyed by stone without a backache; where there was pus in the urine and little to indicate its source; hæmaturia, with no index of its causation or point of origin.

Diagnosis in these diseases has, during the last few years, undergone many phases of evolution as it has in other departments of medicine and surgery. The present day accomplishments in this field are due to the ability to turn the patient inside out, so to speak, and the plain demonstration of the cause and nature of his complaint by means of the various instruments of diagnostic precision. The development of these comprehensive diagnostic methods has accomplished the miracle of evident progress in urology; has developed the speciality of urology from venerology and has won this field from the domain of obscurity and empiricism to one of science and accomplishment.

While urology has progressed in the manner above mentioned, it is generally admitted that the profession at large has not kept pace with its progress. The ground for making such an assertion is the countless number of patients with genito-urinary complaints who suffer needlessly from month to month and year to year—ten, twenty, or more years, often—while under the care of practitioners who go no further in efforts at relief than to apply various "favourite prescriptions" for urinary symptoms or complaints. Instead of giving undivided attention to efforts at learning the source and causation of a hæmaturia, they supply drugs and measures for stopping the bleeding, which is the worst object that can be accomplished by them at that time. Instead of learning the origin and nature of an infection, they are industriously and empirically supplying "internal antiseptics", vaccines, urinary sedatives or soothing syrups that palliate, perhaps, but incidentally postpone the day of definite diagnosis and effectual relief. The failure of permanent relief is not due, in most of such cases to obscurity of the disease or difficulty in diagnosis, but to the fact that no effort to attain a real diagnosis is systematically or methodically made or even advised while the lesion is not far advanced. The precious time is spent on so-called treatment and a wonderful opportunity is wasted.

The necessity of method and a formulated plan in seeking a diagnosis in urinary complaints may be well illustrated by a case of prostatic obstruction. When such a diagnosis is made, certain factors are absolutely essential to make such diagnosis serviceable and nothing short of all of such factors will suffice. They must include definite information as to whether

1. The prostate is hypertrophied or atrophied?
2. Whether there is obstruction to urination?
3. If so, the relative amount of obstruction.
4. The form, physical characteristics, and nature of the obstruction.
5. The physical condition and functional activity of the allied organs (especially heart and kidneys).

If one learned the correct answers to the first four of these diagnostic points, operated, no matter how skilfully, but ignored investigation of the fifth point (condition and functional activity of allied organs), it might very easily prove to be another case of "successful operation, but the patient died"; because renal involvement, with unexpected suppression of urine, uræmia, and death may, and do, follow on the heels of successful operation in such

cases where this point is not thoroughly investigated. The answer to question number one determined by rectal palpation, the finger detecting whether the gland is unduly large, unduly small, or of approximately normal size; that to question number two by passing a soft rubber catheter directly after the patient has voluntarily urinated, which shows whether there is residual urine and its quantity, etc. Question number four can be most advantageously answered by the use of the cystoscope, which shows the conformation and character of the vesical neck and prostate. The answer to question number five can be determined by examination of the urine, physical examination of the heart, together with the application of such renal functional tests as are appropriate.

We will now briefly consider diagnosis as related *to pain; disturbances of urination; urinary findings, obscure infections* and *tuberculosis of the urinary tract.*

Pain.—A whole chapter might be written on pain and the absence of pain in genito-urinary diseases. Unfortunately the large proportion of these diseases are not ushered in by pain. Pain may be primary or secondary. Originating in a diseased or strictured urethra, the irritation may be reflected into the rectum, presenting the whole complaint, as far as the patient knows it, at that point; or ascarides vermicularis may display their vicious effect by reflected irritation from the rectum into the urethra, producing inordinate frequency or troublesome difficulty in urination. The pain of prostatic inflammation is frequently reflected into the glans penis; that of the ureter into the cord or testis; that of the seminal vesicles into the lower back, the rectum or the testis.

Pain in the loin in renal infection is caused by tension of the renal capsule. The pain and tenderness met in renal retention, in focal suppuration of the kidney and also fairly often in the hypertrophied kidney opposite to an infected kidney, is caused by such capsular tension.

The characteristic pain of renal tension is felt in the loin, usually as far back as the costo-vertebral angle; or anteriorly in the region of the gall bladder (in the corresponding region of the left side) or as low down as the appendiceal region.

On the other hand extensive destruction of the kidney substance, from calculus, tubercular or other infections, pyonephrosis, hydronephrosis of gradual development, tumour growth, or from almost any cause, may take place with little or no pain referable to the kidney.

Disturbances of urination—frequency and urgency of urination

are standard indications of irritation of one of the bladder orifices, urethral or ureteral. A healthy person should urinate from three to four times in twenty-four hours, and should not have to get up in the night for that purpose. It is practicable, therefore, to draw a fairly distinct line between the normal and abnormal frequency of urination.

That disturbances of urination, especially in women, are notoriously neglected by the profession, is admitted by all, and often, instead of taking steps to obtain a definite diagnosis of the cause of the disturbance, the physician prescribes a sedative or a simple irrigation. Bransford Lewis, of St. Louis, relates the case of a woman that came to his notice, who had been treated periodically for a chronic cystitis for thirty-eight years, who, on careful examination was found to be suffering from a simple stricture of her external meatus, which was completely cured by one month's treatment.

On the other hand, it is now generally recognized that cystitis as a disease *per se* is extremely rare, and is usually representative of some co-esixting or antecedent infection, either in the upper urinary tract, or in the genitals. No longer are all cloudy urines thought of as cystitis, thanks to the modern methods of investigation such as the cystoscope, ureter catheter, endoscope and modern laboratory technic. Smith, of Boston, in eighty-seven cases of cystitis in women which he studied, showed that 80 per cent. were associated with renal infection. It would, therefore, seem a safe rule to say that infected urines *do not* represent cystitis until infections of the other genito-urinary organs have been ruled out by thorough and scientific investigation. Such investigation should include the urethra especially in the female, and in patients who would not be suspected of a previous gonococcal infection. Infection of the urethra by unclean, rough, or frequently repeated catherization is very often the condition commonly and improperly called cystitis. It is not intended to suggest that infection of the bladder (cystitis) is not common through catheter infection, but it does imply that the bladder is carelessly regarded as the seat of a lesion, which can be shown to be in the urethra in many cases. In many such instances the cystoscope shows a normal bladder.

This form of urethritis is regarded as of little consequence just because the symptoms can so readily be explained and so obviously and promptly relieved. Complete cure, however, does not always follow this manifest improvement. In many cases there is a persistence of the subjective complaints, or a recurrence of

them after a time. The urine may show nothing pathological and a complete examination of the urinary tract (excepting the urethra) shows no abnormality; when the urethra is examined, the lesions of chronic urethritis are revealed and the history of catheter infection is recalled. Such observations would convince any practitioner of the advisability of submitting their patients with subacute or chronic cystitis which does not clear up promptly by the usual measures or which recur, to a thorough investigation of their urinary tracts.

Urinary Findings.—The percentage of albumin in the urine is not an accurate index of the efficiency of the renal function and cannot compare with urea or phenolsulphonephthalein estimations for this purpose. Every infection of the kidney pelvis is accompanied by enough parenchymatous inflammation to discharge, at least, a trace of albumin in the urine, but this amount may be so small as to be discoverable only by the most delicate laboratory methods.

Casts are almost as notable for their absence in renal infections as they are constant in non-bacterial nephritis. Absence of casts in no way modifies the diagnosis of bacterial nephritis in any of its forms. This fact is well illustrated in the urine findings of unilateral renal tuberculosis where the diseased kidney discharges pus and albumin, but no casts, the non-infected kidney, which is the seat of toxic nephritis, discharges albumin and casts but no pus.

Bacteria in the urine, distinguishable only by culture and unaccompanied by pus, signifies a lesion so slight that it is called "latent infection"; when bacteria are so numerous as to cloud the urine, there is a general catarrh of some portion of the urinary tract and the urine will nearly always contain as well a few pus and epithelial cells.

Pus in considerable quantity, if from the kidney pelvis, is likely to vary greatly in quantity at different times, being absent at one time and discharged in great quantities at other times. Such pus, if allowed to settle in the bottom of a glass, forms a muddy greenish sediment, flat upon the surface, adherent to the glass when decanted. Pus of this character means retention, and while it may rarely be from a bladder diverticulum, is almost invariably from a dilated kidney pelvis.

Pus does not account for albuminuria; red blood cells do.

Some characteristics of the urine which would arouse a suspicion of a tubercular infection are (the specimen for examination

should always be obtained by catheter): The urine is large in amount, is pale in colour, of low specific gravity, acid in reaction contains albumin, is hazy or opalescent from intermixture with pus which settles on standing, leaving a pale urine above. The sediment contains pus, and generally microscopic blood.

A characteristic of the sediment will be the absence of bacteria ordinarily found in a purulent urine, and should the urine prove sterile to culture methods, the probability of tuberculosis is strong. Evidence of the power of tuberculous urine to inhibit the growth of bacteria is shown by the fact that, if allowed to stand, the urine will remain clear for a considerable time after the sediment has settled; whereas, when bacteria multiply rapidly in the urine of ordinary pus infections, such urine soon becomes cloudy.

Mixed infections with the colon bacillus and various cocci occurs in a small number of cases changing the above condition. It is surprising, however, to see how persistently sterile a tuberculous urine remains even after repeated cystoscopic examinations.

Hæmaturia.—Macroscopic hæmaturia is a rare symptom in renal infections and, apart from stone and tuberculosis, suggests acute nephritis or pyelitis granulosa. Microscopic hæmaturia is, on the other hand, a common symptom in renal infections, and may suggest acute nephritis, tuberculosis or ulceration of the renal pelvis from other cause.

The presence of blood in the urine either macroscopic, or microscopic, should impel the practitioner in charge of the case to cause an immediate investigation of the source of the bleeding to be undertaken. It may be of the utmost importance to have such an investigation carried out while the bleeding is going on. When it stops, the urine may be as clear as crystal and give no tangible evidence of whence came the alarming hæmaturia of a few days before. Under no circumstances, short of actual danger from loss of blood, should an endeavour be made, by medicines, etc., to check the hæmaturia until opportunity is had for cystoscopic examination. To bring about a temporary clearing of the urine of blood is no real accomplishment, and the more successful the practitioner is in that endeavour, the more he is liable to injure the ultimate prospects of his patient.

In hæmaturia, to depend on the colour of the blood as indicating whether it came from the bladder, ureter or kidneys, proves too often fallacious, and should not be entertained as a scientific means of diagnosis. The only sure method of diagnosis is by the

cystoscope, ureteral catheter with, probably, the addition of radiography.

Some Obscure Infections.—"Urethral chill" or "catheter fever" is now known to occur only if the kidney be previously infected or damaged by retention. It is not, as was previously thought, a reflex nervous manifestation, but an acute exacerbation in a chronically infected kidney. In other words, "urethral chill" is a form of urinary septicæmia, and although it is excited by the passage of urethral instruments, it is known to be associated with a bacteriæmia, and an estimation of the fall of renal function immediately after its occurrence will show the renal character of the lesion. The cause of "urethral chill" appears to be the liberation into the circulation of bacteria from the prostate gland, abraded or contused by the passage of instruments. Guiteras, from his experience, is most strongly of the opinion that it is brought on by over instrumentation at the first visit of the patient, and lack of gentleness in instrumentation, and is, therefore, avoidable in a large proportion of cases.

The so-called "cold in the bladder" of the laity, and so common in the female, is an acute exacerbation of a chronic colon bacillus infection of the urethra, often accompanied by involvement of the contiguous bladder mucous membrane. The acute attacks are brought on by exposure to cold, errors in diet, highly acid urine, over-fatigue, etc.

The striking frequency of this urethral and vesical condition in association with tonsilitis and la grippe has been observed repeatedly. Hunner has called attention to the association of urethral and pharyngeal conditions, and the literature is now voluminous concerning the relations between, or the coincidental abnormalities of certain nasal structures and the urethra and genital organs.

In searches for focal points of infection in patients with obscure inexplicable symptoms pointing to a mild, but persistent septicæmia or toxæmia, the nose, throat, ear, teeth, gastro-intestinal tract and perhaps the upper urinary tract, are thoroughly investigated by the practitioner of to-day. How often, on the other hand, is the condition of the prostate and seminal vesicles properly and thoroughly investigated? That great neglect in the thorough search of these organs for foci of infection, is daily taking place, is acknowledged by all authorities. Such neglect, undoubtedly, is due to several factors: histories of old infections are not diligently inquired into. Physicians do not realize or have only a hazy idea of the symptomatology of prostatitis and seminal vesiculitis;

physicians have the fixed and erroneous idea that inflammations of these organs can only exist in men who have, at some time, suffered with a gonococcal infection. This erroneous idea has been conclusively exploded by Young, Geraghty and Stevens, who, in a careful survey of three hundred and fifty-eight cases of prostatitis, found a previous history of gonorrhœa in but 73·2 per cent. The remaining cases gave histories of masturbation, prolonged sexual excitement, traumatism, instrumentation, or infectious diseases. In 14 per cent. no ætiology could be obtained.

Palpation of a prostate harbouring such a focus of infection very frequently gives no information, for it often happens that an apparently normal gland will produce considerable microscopic pus after gentle massage, which may account for severe and protracted symptoms of obscure origin. If practitioners would bear in mind Caulk's brief and pithy summary of the symptoms which may be caused by seminal vesiculitis, such neglect of these organs would occur less often. Caulk's summary is as follows:

"Various chronic discharges, many chronic bladder distresses, the numerous referred pains in the back, sacral region, hips, legs, perineum, groins, testicles, and penis; recurrent epididymitis and sexual derangements; a vast array of joint processes of an infectious nature, such as articular rheumatism, rheumatoid arthritis, arthritis deformans, and hypertrophic arthritis, numerous renal and cardiac complications, digestive upsets and an array of nervous and mental manifestations which are almost inconceivable."

It may be further stated that the cure of the prostatitis and seminal vesiculitis, which always occur together, will, in the large majority of cases, give permanent relief from the aforementioned complaints.

Renal Tuberculosis is a disease of insidious onset, running a slow, progressive, downward course. It does not cure itself spontaneously, even in cases where the ureter becomes obliterated and the kidneys completely destroyed. These old kidneys often harbour the tubercule bacillus and are a source of danger.

Abdominal palpation in early tuberculosis of the kidney is very often negative and may frequently prove misleading. One kidney may be felt to be slightly enlarged and slightly tender; such a kidney is by no means to be considered the diseased one, as ureter catherization often proves that the palpable kidney is the healthy organ, the increase in size and the tenderness being due to compensatory hypertrophy. Therefore, diagnosis by palpation should never be made without the confirmatory evidence of cystoscopy, etc.

Symptoms of tuberculosis of the kidney are not observable until the lesions connect in some way with the urinary passages. The actual pathological lesions always antedate the appearance of symptoms, sometimes for periods of months or years.

Bladder irritability is the most common early symptom and the one most often causing the patient to seek relief. This first shows itself in a gradually increasing frequency of urination, at first confined to the day, but later becoming also nocturnal in occurrence. Later on, when actual secondary bladder involvement has taken place, urgency and pain at the end of micturition occur. In some cases the symptoms are those of a cystitis during the entire course of the disease, there being at no time any symptoms referrable to the kidney.

Hæmaturia is occasionally a very early and may be, for a time, the only symptom. It is apt to be slight and transient and the patient and the physician may be lulled into a false sense of security by its disappearance. The interval between the first hæmaturia and the occurrence of other symptoms may be considerable. Thompson-Walker cites a case in which such interval was two years. Pain may be entirely absent; many cases with extensive destruction of the kidney from tuberculous infection being known without pain of any kind occurring.

It was previously thought that renal tuberculosis was secondary to a primary bladder infection; we now know that the renal lesion, however, is always the primary one, and the infection of the bladder secondary. The bladder involvement may be secondary to a tuberculous process in the genitals in the male and, very rarely, the Fallopian tubes in the female. However, given a causeless progressive cystitis of insidious onset in a patient from twenty to thirty-five or forty years of age, which does not yield to ordinary treatment, in fact, is often made worse by treatment, the presence of renal tuberculosis is to be strongly suspected.

Such suspicions being aroused, the diagnosis is to be made by cystoscopy, together with a careful and exhaustive study of the urine and functional tests on the individual kidneys. The diagnosis can be positively made only by the demonstration of the tubercle baccilli in the urine together with pus and other products of inflammation either by microscopic examination of the sediment, cultural methods, or guinea pig inoculation.

The only way to prove that the tuberculous process is localized in the upper urinary tract is by cystoscopy with ureter catherization and the examination of the unblended urine from one or both kid-

neys, at the same time employing one of the tests for kidney function. By this means the localization of the disease is carried out and the condition of the functional activity of the healthy organ can, at the same time, be ascertained.

In the search for tubercle bacilli in the urine, it is well to remember that the pus and epithelial detritus sedimentize much more readily than do the tubercle bacilli. Therefore, in a urine which evidently contains a good deal of pus, centrifuge at low speed for two or three minutes, pour off the supernatent urine into another tube and centrifuge at high speed until the urine is clear. The sediment so obtained will be slight in amount, but will contain a relatively large amount of bacilli. If the urine contains little sediment, the urine can be repeatedly poured off, and the tube refilled and recentrigufed.

McGill sustains a severe loss by the resignation from the medical faculty of Colonel J. G. Adami. He has accepted the position of Vice-Chancellor of the University of Liverpool. For this position he is eminently fitted, as Dr. Adami holds all the qualifications necessary for the head of a large institution. Although he is best known as a pathologist, and as a compiler on pathology ranks among the very best, yet he is by no means a one-sided man. He has a breadth of knowledge seldom seen in medical men of to-day.

He was largely instrumental in organizing No. 3 General Hospital and went to England with this unit. He was retained in London in an administrative capacity and later assumed the duties of Medical Historian for the Canadian forces. The result of his work in the latter capacity is evident from the book just published in England, "The Story of the C.A.M.C." This book has been well received and favourably reviewed both in England and here.

Only recently Colonel Adami was appointed a Commander of the Order of the British Empire as an appreciation of his work during the war. The Journal, in which he always took a great interest, extends to him its congratulations on the new appointment at Liverpool, and the recognition given to his work during the war.

THE APPLICATION OF RUTHERFORD MORISON'S TECHNIQUE OF WOUND TREATMENT TO CIVIL SURGERY

By Fraser B. Gurd, B.A., M.D.

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As a result of an experience of well nigh four years in war surgery, for the most part as surgical specialist with a Casualty Clearing Station in France, the writer has had an opportunity of becoming familiar with the several methods of wound treatment which have been devised to meet the new problems imposed upon the surgeon. The tremendous number of filthily contaminated and infected wounds which result from injuries by modern fire-arms have formed the most important part of these problems.

It is my opinion that of these methods the one that will most frequently prove helpful to the civil surgeon is that outlined by Mr. Rutherford Morrison. This method is commonly referred to as the "Bipping" of wounds.

The following quotations from Mr. Rutherford Morison's articles indicate the claims made by him for his technique, and also outline the essential features of his method of treating wounds. It must be borne in mind that the wounds referred to by him are infected war wounds as seen in England, at a stage when the dangers of fulminant gas gangrene were largely past.

Morison writes: "It has been proved that with the aid of antiseptics, primary union after suture of infected suppurating wounds is possible. Towards the end of the year 1915, disheartened by the results of treatment (free drainage and frequent dressings), there gradually developed a new method of dealing with infected wounds which has proved efficient. Though not yet ideal in results it is more nearly so than any other so far evolved. My conclusion now is: that if it is possible to go to the bottom of an infected wound so that it can be thoroughly cleansed mechanically,

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and suitable antiseptics be applied, the wound can be closed at once with interrupted sutures, always with impunity, and many times with the prospect of finding it healed when the dressing is removed for the first time at the end of three weeks."

In civil surgery, traumatic wounds are of perhaps less frequent occurrence than are infective processes, such as furuncle, carbuncle, cellulitis of the hand and other soft tissues, appendix abscess, etc. It is, however, obvious that once the surgeon has incised such a focus he has for treatment a wound more or less comparable to that presented by the less severe type of infected war wound. The application, therefore, of the experience gained in the treatment of wounds in war to civil practice should not be difficult.

The essential features of the technique as employed by the author are as follows:

1. Exposure: (*a*) Incision; (*b*) Excision.
2. Mechanical cleansing: (*a*) Excision; (*b*) Curetage; (*c*) Scrubbing.
3. Application of antiseptics: (*a*) Alcohol; (*b*) B.I.P.P.*
4. Suture: Either immediately or after the lapse of several days' packing with B.I.P.P. and paraffin gauze.
5. Infrequent dressings: *i.e.*, every five to ten days.

Incise the part thoroughly, if possible sufficiently to permit of visual inspection of all affected tissue; excise all necrotic tissue, and also the tissue which it is thought will ultimately slough as the result of either mechanical injury or malnutrition.

Arrest hæmorrhage as thoroughly as possible, preferably without the employment of ligatures, drain the wound and mop it and the surrounding skin with alcohol (or methylated spirit). Again dry and apply B.I.P.P. This must be well rubbed into the surface tissue with dry gauze or the gloved finger. All excess must be removed, leaving only a thin covering over the wound surface.

* B.I.P.P. is prepared as follows:

R.	Bismuth subnitrate.....	1 part
	Iodoform.....	2 parts
	Liquid paraffin, about....	1 part

These ingredients are thoroughly mixed to form a thick paste. Vaseline and soft paraffin are useless substitutes for liquid paraffin. The paste need not be specially sterilized.

Illustrative Cases

The following cases have been selected from a very large number treated by this technique in order that the application of the method to various types of cases may be more easily appreciated.

1. *Carbuncle.* Mr. S., suffering from a carbuncle at back of the neck, 7 cm. in diameter. The inflamed zone blocked off by local anæsthetic (novocaine). The crucial incision, reaching well beyond the hyperæmic borders, was made, and four triangular flaps thus formed, dissected up, and their under surfaces incised, all obviously necrotic tissue excised, bleeding arrested by packing, the wound mopped with alcohol and the excess of B.I.P.P. rubbed in. The cavity thus formed tightly packed with paraffin gauze in the centre of which is placed a small mass of B.I.P.P. First dressing seven days after operation showed a complete absence of hyperæmia and infiltration, no pus. Packing removed, adherent to its under surface a moderate amount of necrotic material. Except for two or three small patches, the wound is covered with healthy bright red, firm, granulations, Mopped with spirits, "bipped" and repacked. Seven days later second dressing, no pus, no necrotic patches lying in wound. The four flaps made at operation replaced in position and held by crossed adhesive strapping. Strapping removed five days later showing primary union with a small depressed crucial scar.

2. *Deep Cellulitis, Thenar eminence.* Patient presented himself at the outdoor clinic of the Montreal General Hospital, suffering from a markedly swollen hand, the whole dorsal of the hand was puffy and œdematous, the thenar eminence discoloured and showing a small amount of pus exudating from two small excised wounds. Incision under general anæsthesia commencing on the dorsum of the hand between the heads of the first and second metacarpal bones, and extending through the thenar eminence to the flexor surface of the wrist joint. The thenar muscles dissected free from overlying necrotic fascia, bleeding arrested, spirits, B.I.P.P., and paraffin gauze pack. First dressing five days after operation, pack removed, little or no purulent discharge on the dressings, a small amount of sloughing fascia still present. "Re-bipped" and packed. Second dressing seven days later, no pus, no œdema, healthy granulations throughout. "Re-bipped" and the flap-like fold of skin fixed in position by adhesive strapping. Ten days later soundly healed with little or no inferference with function.

3. *Appendix abscess.* As a routine in cases of acute appendicitis the author has employed the method of smearing the muscle layers, skin and subcutaneous edges with B.I.P.P. prior to opening the abdominal cavity. By the employment of this technique, wound infections which are so commonly troublesome during convalescence have been largely avoided. In cases in which a localized abscess has been found, this has been treated as though it had been an abscess of the soft parts.

4. *The closure of granulating amputation stump of thigh with necrosis.* Cpl. H. F. Right thigh amputated about the middle one hundred and five days previously, guillotine amputation. Granulating stump approximately 7 x 3 cm. in size. *X*-ray shows sequestration of the lower end of the femur. Operation—excision of cone-shaped segment of tissue, including the whole of the granulating area and reaching down to bone. Sequestrum removed, bleeding arrested, spirit mopping, B.I.P.P., protected mattress sutures in layers. First dressing fourteen days after operation, sutures removed seventeen days, primary union. Under observation for seventy-one days following operation, union remained sound.

5. *Osteotomy, tibia and fibula during period of inflammatory reaction, and bone necrosis.* Sgt. R. T. Wound thirteen months gun shot wound, fracturing tibia and fibula close to ankle joint. Three operations have been performed in the hope of controlling the necrotic process. Large granulating wounds of both inner and outer aspect of leg, the latter communicating with the necrosis of the fibula. Marked mal-union of the tibia. Operation—excision of granulating tissue, and surface of fibula including dead bone. Cuneiform osteotomy of tibia, simple osteotomy of fibula. B.I.P.P., suture, in so far as possible owing to loss of skin. Result at the end of forty-five days, at which time the patient passed from under the author's observation, excellent. No cellulitis, arrest of bone infection, wounds almost completely epitheliated, foot in good position.

6. *Gun shot wound of leg, compound fracture of tibia with extensive pyogenic infection of calf.* This case was treated by the combined method of Morison and Carrel, the value of B.I.P.P. in protecting the bone from infection by the pus pouring over it is of interest. Pte. B. McC., aged twenty-seven, wounded October 30th, 1917, admitted to my care November 18th, 1917. Patient looked ill and anaemic. Temperature, 101°-103°; pulse 106-120. Injury of left leg, E—— and E—— wounds 4 cm. above the ankle

joint with comminuted and spiral fracture of the tibia. Both wounds discharging copiously. Diffuse cellulitis of inner half of the leg. November 19th, incision into infiltrated area failed to discover pus. Original wounds enlarged and loose bone fragments removed. Walls of bone cavity B.I.P.P. and packed with paraffin gauze. Severe post-operative reaction followed by some improvement; later elevation in temperature. Wound dressed for observation 23rd, 25th and 27th. November 29th, operation—incision 24 cm. long along inner border of tibia through soleus muscle. Large abscess cavity evacuated. Carrel tubes (four) inserted. Bone cavity repacked. December 1st, operation—dressing under anæsthetic, necrotic fascia excised, upper end of spiral fracture B.I.P.P., Carrel tubes (four). December 7th, has been dressed alternate days since operation. Tubes removed, B.I.P.P. and paraffin gauze pack applied without anæsthetic. December 10th, dressing under anæsthetic. Wound clean but for suppuration focus at upper end of spiral this nibbled with ronguer and packed with excess of B.I.P.P. and paraffin pack. Two mattress sutures inserted to commence approximation of tissues. Bone cavity repacked. December 15th, dressed—packing changed. December 19th, anæsthetic, both bone areas cleansed and repacked. Four mattress sutures inserted approximately skin edges to within ·5 cm. January 15th, 1918, fourth dressing since last operation. Wound closed completely but at two points of packing. Will require anæsthetic for bone excision at these two points, lesion of bone is firm, in perfect position. January 21st, operation. Wounds dry and healed but far focus at site of original wound. This cavity much diminished in size. Further operation will probably not be necessary. Cavity repacked B.I.P.P. and paraffin gauze.

The following two cases are included and they demonstrate certain of the characteristic effects of poisoning.

7. *Gas gangrene, leg.* Gnr J. A., wounded July 5th, 1917. Massive gangrene of right calf. Operation—excision of gastrocnemius in toto, and of part of soleus. Wound "bipped", Carrel tubes also inserted. Severe wound of thigh, foul smelling infection, wound excised, B.I.P.P., paraffin gauze pack. For the following two days patient was drowsy and vomited a great deal, skin bronzed. Evacuated to Base. Note received from the Base dated July 20th, "Wounds examined July 10th, B.I.P.P. reapplied. July 16th, redressed, healthy granulations, eusol dressings. Distinct bronzing

of skin and conjunctivæ, also soreness of gums present upon admission, also greatly improved. Evacuated to England."

8. *Multiple wounds, bismuth stomatitis.* Pte. J. Penetrating wound of the right ankle joint; traumatic amputation, left forearm. Severe lacerating wounds of right thigh, left thigh, left shoulder and right hand. All wounds excised (circular forearm, left), "bipped" and sutured. For several days following operation, patient was drowsy and vomited Temperature was somewhat elevated, and pulse rapid. Severe B.I.P.P. stomatitis occurred in this case.

Note the above case showed the most marked evidences of both iodoform and bismuth poisoning of any which have been treated by the author. It will be noted that in this case a very extensive area of tissue was involved. The patient made an uninterrupted recovery.

Discussion

The foregoing cases have indicated, I trust, certain of the usefulnesses of Morison's technique. The objections to its employment are (1) the length of time consumed at operation as compared with more temporizing methods of treatment; (2) more complete anæsthesia required; (3) subsequent examination by means of the *x*-ray are more or less interfered with; (4) poisoning. The latter objection is the one which has been brought forward most seriously. It is the opinion of those who have used the method most that if properly employed, and a minimal amount of B.I.P.P. be left in the wounds, and too large surfaces are not subjected to treatment by it, important poisoning will not occur. During the past six months, *i.e.*, while on duty in Canada and dealing with less severe types of wounds, I have employed it in scores of cases, at no time with any untoward manifestations. It is my opinion that if not more than one square foot of tissue has been treated, the danger of any important poisoning is very improbable. I have as a routine made use of the suggestion made by Colonel Gordon Watson to administer sodium bicarbonate to all cases, both before and after operation.

The advantages of the method are (1) the absence of clinical signs of inflammation, there is no redness, heat, pain, or swelling, and generally fever is absent; (2) the surrounding skin does not become soggy, but remains soft, supple and unsodden, the dressings are relatively free from pain; (3) as compared with any method of daily or more frequent dressings, there is a great increase in the

comfort of the patient, immobilization of bone fragments is more easily carried out, and there is great economy in the use of dressing materials. In evidence of the economy in dressing materials, the following notes based upon an investigation carried out by the author at the request of Sir Robert Jones, in Aldersley Military Orthopædic Hospital, Liverpool, a year ago, are given. During the month of October approximately the same number of cases with open wounds were in Ward C of Highfield Military Hospital as during the month of December. During October the cases were treated for the most part by means of daily hypochlorous dressings; the dressing materials used consisted of forty-eight rolls of cotton and six hundred yards of gauze. During December, although the type of wounds in the ward was much more important, the consumption of materials dropped off to sixteen rolls of cotton and three hundred and sixty yards of gauze.

For a period of five weeks ending January 10th, 1918, the number of dressings which would have been performed under the daily dressing routine would have been from one thousand and fifty to one thousand four hundred. Actually, two hundred and sixty-seven dressings were performed.

The special summer courses offered by the Medical Faculty of McGill University to medical officers who have returned from overseas service, began June 16th, and are to continue for a period of three months. The work will be entirely clinical and will be carried on in the wards and out-patient departments of the hospitals. The two courses comprise, one for the general practitioner and one for those who may desire to do special work in one or more branches.

The following course is offered for the general practitioner:

Surgery—Ward rounds daily. Operations open to candidates and opportunity offered to assist. Out-patient work in general surgery and in surgical specialties. Urology, orthopædics, etc.

Medicine—Ward rounds daily. Clinical laboratory work at stated periods. Assisting in out-patient departments, general medicine and medical specialties—pediatrics, neurology, etc.

The course also embraces work in obstetrics, gynæcology and pathology. Instruction in post-mortem work will be given as occasion arises. Additional courses will be offered in ophthalmology, oto-laryngology, urology, pediatrics, pathology, and bacteriology. In these special courses it is proposed that the returned officers selecting them shall act as assistants to the heads of clinics.

PRELIMINARY REPORT ON THE RECONSTRUCTION OF THE CIRCULATION OF THE LIVER, PLACENTA AND LUNG IN HEALTH AND DISEASE

By Louis Gross, M.D.

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PURSUING studies of the vascular anatomy of organs by a barium sulphate gelatine injection method previously described[1] I present here a preliminary report of several observations in addition to those of my previous publications[2].

Briefly, to repeat once more, the method consists in a saline irrigation followed by injection of the blood vessels with a barium sulphate emulsion in gelatine. This is carried out at a temperature 40°C. and under a pressure of 120 m.m. of mercury; stereoscopic skiagraphs are then taken of the formalin hardened organs.

This work has, as formerly, been carried out under the direction of Professor Oertel in the laboratories of the Royal Victoria Hospital and McGill University.

The first slide presents a liver injected through the portal vein. It is to be observed that the latter divides into two large branches which run transversely through the liver. From this ascending and descending branches are given off which run perpendicularly close to the edge of the liver with very little alteration of lumen. There it abruptly breaks up into a peculiar rigid network of capillaries which make up the bulk of the portal circulation.

The next slide is an injection of the normal venous circulation of the placenta. Here we observe that each cotyledon presents a comb-like arrangement of sinusoids which join to form large veins. One vein drains each cotyledon, and all the veins join to form the umbilical vein.

The next slide demonstrates the striking contrast of arterial circulation of the placenta to that of the venous. We observe that the two arteries break up into several long primary branches which, as they arch over the cotyledons, give off a short secondary branch

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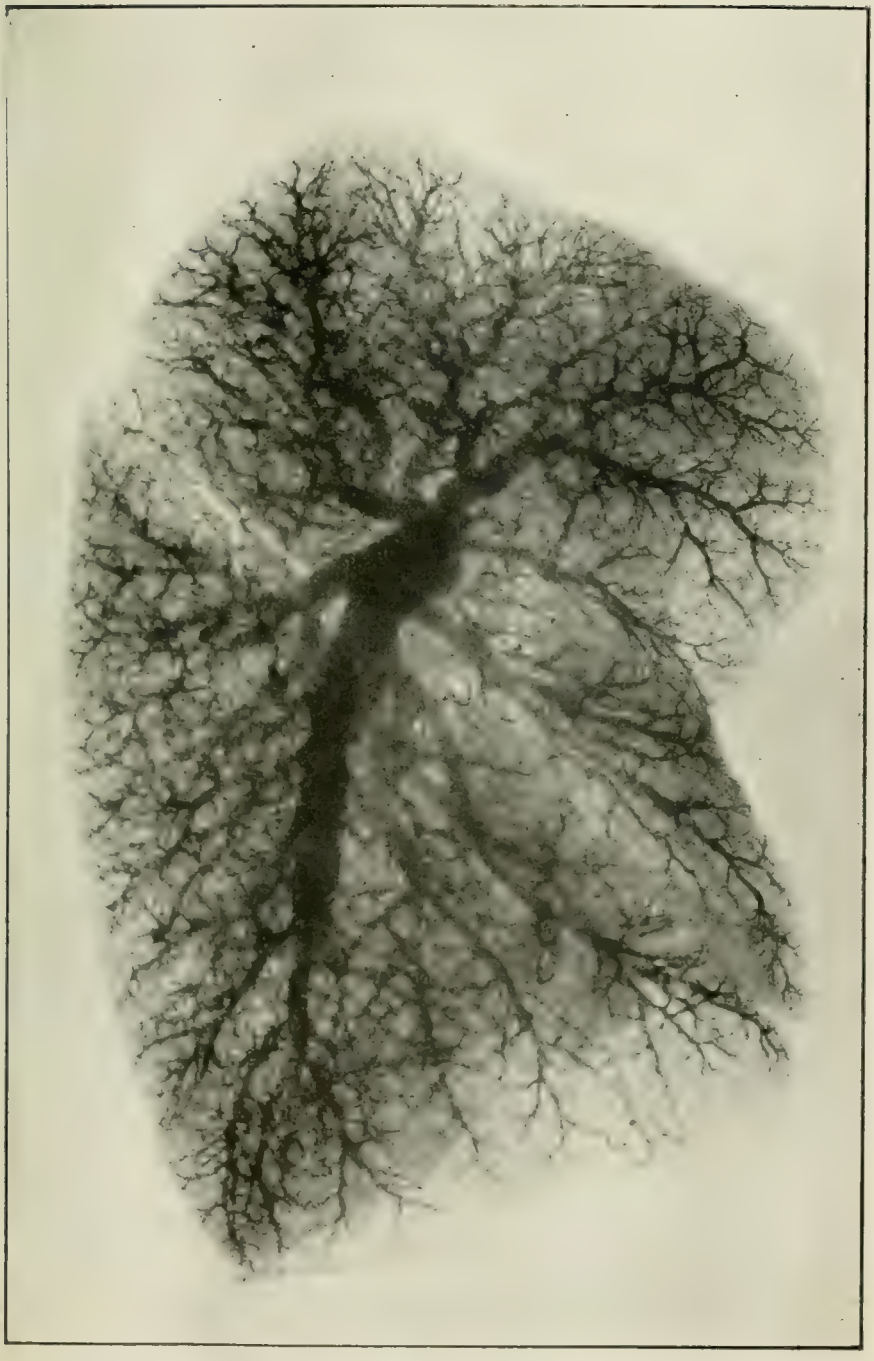

Fig. 1

Fig. 2

to each. These short branches, whose lumina are almost as wide as those of the primary branches, suddenly disappear in a basket-shaped network of capillaries which presents a peculiar whorl arrangement.

In contract to the venous sinusoids, the arterial capillaries present a most intimate anastomosis.

This arterial arrangement is anatomically exquisitely suited for a most intimate and thorough perfusion of the capillaries with fætal blood.

The next slide shows the venous circulation of a placenta which presented at birth numerous infarcts. A careful investigation of the placenta leads us to the conclusion that these infarcts are of congenital origin and probably due to developmental faults in the vasculature of certain districts.

One observes here interspersed among the normally injected cotyledons clear spaces drained by sparse and narrow veins. At their origin these veins show in many places a peculiar lopped-off condition corresponding in microscopic sections to the presence of a hyaline connective tissue which follows the smaller branches and tightly compresses the veins.

Close to the junction of these venous branches with the veins of the umbilical stalk we found peculiar large areas of similar fibrous tissue which nowhere showed evidence of active inflammatory processes.

The next slide, Fig. 1, illustrates the pulmonary arterial circulation. This presents a simple though abundant dichotomy of the main branches, a gradual diminution in bore and a profuse capillary distribution. The circulation is everywhere even, a distinct lobulation can be seen and, excepting for several small anastomoses under the pleura covering the diaphragmatic surface of the lung, the vessels appear to be end arteries.

In sharp contrast to this, the last slide, Fig. 2, shows an injection of a lung whose upper two lobes were the seat of a lobar pneumonia. One observes in the non-inflammatory lower lobe of this lung a tremendous dilatation of the vessels with massive injection: the capillaries seem to be from two to three times their normal calibre and the whole lobe presents a striking appearance of compensatory arterial dilatation.

In the upper lobe a moderate preservation of its circulation is evident, but there exist unusual clear spaces with poor injection and even the injected vessels are somewhat narrowed and compressed.

The middle lobes shows generally lack of injection, only severa

large branches, moderately compressed, appear. These injected branches end very abruptly and the whole lobe presents striking anæmia.

The upper two lobes illustrate the tremendous compression which the lung parenchyma and interalveolar septa suffer through the outpouring of the exudate, and that in marked exudation, as existed in this middle lobe, an almost complete anæmia occurs.

I am very much indebted to Mr. McNeill and Major Morgan for the excellent skiagraphs, also to Mr. Webster, superintendent, Royal Victoria Hospital, for placing these resources at my disposal.

(These slides were demonstrated with the projection apparatus.) Of the slides only two are here reproduced as illustrations.

References—

1. *The Internat. Assoc. of Med. Museums, Bull.*, No. 7, 1918, page 33.
2. *The Journal of Med. Res.*, vol. xxxvi., No. 3, page 327, and vol. xxxviii, No. 3, page 379.

According to figures collected by the American Medical Association, with headquarters in Chicago, there has been a nation-wide drop in the death rate from typhoid fever. The statistics cover every city in the country having a population of over 100,000, and the decrease seems to have affected them all. This effect is greatest in the nine largest cities which contain 15 per cent. of the population of the country. Ten years ago typhoid was the great national filth disease and the only defence against it was from local campaigns for the protection of the water supply. An elaborate and costly filter system was adopted in Philadelphia and less expensive ones in smaller cities. Notable reductions in the typhoid death rate were shown in those localities where the purity of the water supply had been protected. Such reductions were local and exceptional, however, and there was no question as to their cause. The present reduction is nation-wide and remains to be explained, as the full statement of the American Medical Association has not yet been received. In the last ten years inoculation for typhoid has been adopted by the Army and Navy in Canada, the United States and Great Britain with highly beneficent results, but there have been no indications that its use among civilians was general enough to account for this very great reduction in the death rate. It may be that inoculation in some cities has coincided with better water supplies and drainage in others. The main thing is that "the typhoid menace", of which we used to hear so much, is becoming negligible. The lives saved in that way will do something to offset the losses due to war.

RADICAL CURE OF HERNIA

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THIS paper is not written for the purpose of discussion or critical comparison of the classical operations upon inguinal hernia, or the various modifications which have been advanced for improvement upon them. After a fairly wide experience in hernia cases in civil practice, the writer has been surprised at the comparatively large number of recurrences met with in soldiers who have been operated upon either just before or after enlistment.

A careful study of the anatomical findings in these patients has led to the conclusion that the basic principles involved in the radical cure of an inguinal hernia are not appreciated by every operator. Since herniotomy is regarded as a simple or minor affair, a review of the cases may be of value. Before proceeding to their analysis, it is advisable to consider the anatomical factors involved.

Inguinal hernia is essentially due to congenital weakness of the abdominal wall plus a sudden or gradual increase in intra-abdominal pressure.

The internal abdominal ring is the weakest point in the structure of the inguinal canal. This deficiency is combatted normally by the fibres of the internal oblique muscle which take origin from the external half of the ligamentum inguinale (Poupart's ligament). These fibres are directed almost transversely and cover the internal ring. Should the muscle get an origin more external on the ligament, the lower margin of the muscle will be found above the level of the ring. Again, if the ring is abnormally large, especially in a distal direction, the muscle will not cover it. In other words, an abnormal relationship between the internal oblique muscle and the internal abdominal ring will predispose to hernia.

At the external abdominal ring, the weakness of the wall is compensated for by the fact that the fascia triangularis, the falx inguinalis (conjoined tendon) and transversalis fascia are all attached to the linea pectinea directly posterior to the gap in the

aponeurosis of the external oblique. The efficiency of the wall at this point is verified by the rarity of direct hernia.

The sac containing the hernia is an important consideration. Whether this structure is congenital, encysted, infantile or funicular, it must be properly dealt with. Since it is a direct prolongation of parietal peritoneum, passing through the internal abdominal ring, it must be adequately removed in such a manner that no cone-shaped process of peritoneum is left opposite the internal ring, which in itself would create an inherent tendency toward recurrence. The findings in the recurrent cases indicate that this is not always done. In congenital hernia there is nearly always a constriction of the sac close to the margin of the internal ring; another constriction may be found anywhere between this point and that part of the sac which under normal conditions would have become the tunica vaginalis testis. It has been evident, in at least three instances, that the operator mistook the distal constriction for the proximal, and therefore did not ligate the sac close enough to the internal ring.

The internal abdominal ring is a potential opening in the fascia transversalis, situated one half inch internal to the midpoint of the ligamentum inguinale and normally is just large enough to afford exit for the spermatic cord. The deep epigastric vessels pass medially to the ring, forming the lateral boundary of Hesselbach's triangle; this fact should be borne in mind in plastic work upon the ring. In the presence of hernia, the ring varies greatly in size; in this series it ranged from slight enlargement to an opening admitting four fingers. Obviously, the operator who leaves a large ring will be disappointed in his results.

In complete or scrotal hernia, the external ring is often considerably enlarged. But in incomplete cases (bubonocele) this ring is not disturbed and therefore is usually normal in size. Any suturing of the crura of this opening is unnecessary in incomplete hernia. In the scrotal variety it should be left patent enough to easily admit the cord.

The radical cure, therefore, depends upon the following: (*a*) Adequate obliteration of the sac followed by a displacement of the stump from the region of the internal ring.

(*b*) A correct relationship must be established between the internal abdominal ring and that part of the internal oblique muscle which takes origin from the ligamentum inguinale.

(*c*) The internal ring must be left just large enough to allow the exit of the spermatic cord.

(*d*) A proper closure of the external abdominal ring, if necessary.

To accomplish these fundamental facts, the technic of a method used by the writer is submitted.

An incision, involving skin, Campers' and Scarpa's fascia, is made parallel to the internal half of the ligamentum inguinale and one inch above it. The superficial epigastric and external pudenal vessels are severed and ligatured.

The aponeurosis of the external oblique muscle is incised in the direction of its fibres, care being taken not to cut either crus of the external abdominal ring. The margins of this fascia are retracted upward and downward, exposing respectively the internal oblique muscle and the ligamentum inguinale. This step exposes the inguinal canal and its contents.

The spermatic cord is not lifted from its bed. The cremasteric fascia and infundibuliform fascia are opened the full length of the canal. This uncovers the component elements of the cord and the sac, imbedded in a variable amount of extraperitoneal fascia.

The sac is opened. Its contents are returned to the abdomen; it is then sponged away from the spermatic cord up to the level of the internal ring. At this point the ductus deferens will be found in close apposition to the sac. The latter is then transfixed and ligated with No. 0 catgut and the redundant portion excised. If the internal ring will admit more than one finger, the sac is treated as if it were an ordinary incision in parietal peritoneum and is closed by continuous suture. In the writer's experience this is usually the condition found. A full curved needle is then threaded with the free ends of this suture and is passed through the internal ring upward as far as possible between the parietal peritoneum and the transversalis fascia (in the extraperitoneal fascia). It is then passed forward through the transversalis fascia, transversalis and internal oblique muscles. Traction on this suture displaces the stump of the sac above the level of the ring. The ends of the suture are tied against the internal oblique muscle.

When the internal ring is enlarged, and it usually is, the lateral margins of the opening are drawn together snugly about the cord by No. 1 catgut. These stitches should always be placed laterally to the cord because the deep epigastric vessels lie internal to the ring.

The coverings of the cord are closed by one or two No. 0 catgut sutures.

The lower margin of the internal oblique muscle is then brought

into apposition with the abdominal surface of the ligamentum inguinale. This is accomplished by three or four mattress sutures of No. 2 chromic gut. The first stitch is placed at the medial end of the canal and brings the junction point of the muscle fibres and conjoined tendon into apposition with the medial extremity of the ligamentum inguinale. There should be just sufficient room medial to this suture for the cord to exit from the canal. When this stitch is tied, the lower margin of the muscle falls into natural apposition with the ligament and is held in place by the series of mattress sutures.

The incision in the aponeurosis of the external oblique is then closed with No. 1 chromic catgut. If it is redundant, the edges may be overlapped.

The skin and superficial fascia are closed with a sub-fascial and subcutaneous silkworm gut suture. A dry gauze dressing is placed against the wound and the ends of the two silkworm stitches are tied over it.

The question of convalescent treatment after herniotomy is very important. A careful inquiry in the recurrent cases reveals the fact that the average period in hospital was three weeks; this was followed by ten days' furlough and one week light duty. The exigencies of the service, at the time these men were operated upon, demanded the early return of these soldiers to active duty.

Since complete cicatrization does not occur for probably a period of ninety days, the recurrences in these cases may be partially attributed to their hurried return to physical exertion. Therefore, a recommendation for more extensive convalescence following herniotomy may seem not unwarranted.

There were twelve recurrent herniæ operated upon by the writer in the Western Ontario Military Hospital during the last six months. The Bassini operation had been apparently chosen in all cases. In four instances, the union between the internal oblique muscle and the ligamentum inguinale was still intact, but the hernia protruded through the hiatus left for the spermatic cord. The internal abdominal ring, in five cases, was large enough to admit from three to four fingers; the three remaining cases proved to be congenital hernia.

From a study of these cases the following facts may be deduced:

(*a*) Consideration of all factors involved in the anatomical ætiology of hernia is necessary.

(*b*) Adequate treatment of the sac is imperative.

(*c*) The internal abdominal ring must be constricted to a capacity just sufficient for passage of the cord.

(*d*) Any displacement of the cord from its normal position is not only unnecessary, but may predispose toward recurrence.

(*e*) Convalescence should be reasonably protracted.

In his annual report on the work of the Royal Edinburgh Mental Hospital, the physician-superintendent, Dr. George M. Robertson, dealing with the mental effects of the war, says that the public anxieties connected with the varying fortunes of the war have not caused much insanity. The mental breakdowns, due to these causes, have been more than counterbalanced by a diminution of insanity in other directions. The war was an event of such absorbing interest that it distracted many from their retrospective habits and personal worries, thus acting as a protection to them. To quote from the report:

"Short of producing actual mental disorder, the extraordinary economic conditions experienced during the war have had a very unsettling effect on many. A psychological factor which operates in fomenting the unrest which exists has not yet been referred to. It is a remarkable fact how many young men who were exempted from military service, and earned high wages in comfort and safety at home, are taking a leading and active part in economic disturbances. They believe that they are actuated by altruistic motives and are fighting solely for the welfare and rights of the class to which they belong; but how much of their action is really due to uneasiness and unrest in their own minds? Just as it sometimes happens that a great swindler throws himself into church work to stifle the reproach of his conscience, so these men, who shirked fighting for their country in France and Flanders, ease their minds of this painful knowledge, and protect their injured feelings of self-respect by the thought that they are nobly doing their bit by now fighting for their fellow workers. This is a mental process for defence purposes known as inversion. They have not been loyal members of society, and they now deceive themselves that they are among the most faithful. How different the state of contentment and peace of mind of the severely wounded. They know that they have done their duty by their country and feel that everyone else thinks so too. The herd instincts are distressing the one class while comforting the other."

Case Reports

LIVING CASE: STRICTURE OF THE ŒSOPHAGUS IN A CHILD

By E. M. Eberts, M.D.

Surgeon, Montreal General Hospital

MY reason for bringing this case before you is that it represents a condition from which recovery is very unusual. During the last twelve or fifteen years we have had a number of cases of stricture of the œsophagus in young children, following the swallowing of lye, and the results of treatment in cases in which the stricture has gone on to complete stenosis, as in the present case, have been practically nil.

This child, aged four, was sent to hospital by Dr. J. J. Ross on July 31st, 1918, admitted to the service of Dr. G. G. Campbell, and transferred to my service early in August. Following the *x*-ray demonstration of the presence of stricture, an attempt was made, under a general anæsthetic, to pass bougies, but nothing could be passed beyond a point slightly below the level of the upper border of the manubrium sterni. We then tried to induce the child to swallow a silk thread, and had a special bougie prepared with the end perforated for the passage of the thread. This method was also unsuccessful. The bougie passed just behind the upper border of the sternum and there met with resistance. I then decided to expose the stricture, if possible by opening the œsophagus low down in the neck. By this means, with the mucous membrane on the stretch, a urethral whip was passed and the stricture dilated sufficiently to insert a No. 4 soft rubber catheter. This catheter was left *in situ* for forty-eight hours, at the end of which time a No. 8 was quite easily inserted. Within a fortnight we were able to pass a catheter the size of an ordinary enema tube, and finally an ordinary stomach tube. On November 1st, under anæsthesia, the tube was removed from the neck and passed with-

Presented at the meeting of the Montreal Medico-Chirurgical Society, February, 7th, 1919.

out difficulty into the stomach by way of the mouth. On November 10th the neck wound had entirely healed. The child was fed through this large tube for a few days longer. Then the tube was removed during the day and passed only at night. Subsequently it was left in position every other night until at the present time it is necessary to insert it only every third day. The child is now on full diet, and, while there is no evidence of stricture, the passage of the tube is maintained, because, as you know, these strictures, except under prolonged treatment, are likely to return.

CONGENITAL MALFORMATION IN SCROTUM; TWO TESTES AND UTERUS IN RIGHT PORTION OF SCROTUM

By D. W. MacKenzie, M.D.

P. J., male, aged thirty-eight, single. Admitted May 27th, 1918. Occupation, factory hand.

Complains of rupture, pain, and mass in right groin.

Onset. Thinks he had a mass as long as he can remember, more pronounced for past twenty-five years; last four days has increased in size and become painful.

Diagnosis. Congenital mal-descent of testes with uterus in right portion of the scrotum.

History. Since the age of five or six years has had swelling in the right groin: this followed, he thinks, a kick. It has appeared and disappeared at intervals for the past two years. Last winter, he thinks, it was much smaller for several months without the use of a truss, which he has worn most of the time as long as he can remember.

Last week he had a vomiting attack accompanied by headache. A few days later (four days ago), the swelling in the groin increased, and extended to the scrotum. There was considerable pain; this has persisted. Has had no vomiting for four days.

Past history. Scarlet fever in childhood. Has several times

From the Department of Urology, Royal Victoria Hospital, Montreal.

had headache and vomiting lasting one or two days. Does not smoke or drink. Two years ago had a gonorrhœal urethritis; has never been completely cured; has a morning drop at present. No history of lues.

Physical examination. A well developed, well nourished man, in no apparent pain or distress. Skin and mucous membranes are of good colour; there are a few small reddish areas on skin on arms and legs. *Lymphatic system.* Left axilla has a palpable gland; otherwise normal. *Respiratory system.* Chest well-formed; expansion good and equal; vocal fremitus normal; percussion, normal lung resonance throughout; auscultation, normal chest. *Cardio-vascular system.* Pulse rate 70, regular good volume and tension—vessel wall just palpable; heart, normal beat, no murmurs. *Gastro-intestinal system.* Teeth, upper are false, lower poorly kept; tongue, clean; abdomen moves freely on respiration; equal and symmetrical; *Nervous system.* Deep and superficial reflexes present; no pathological reflexes; pupils equal in action. *Genito-urinary system.* Scrotum: Right side is greatly enlarged; no tenderness. A mass simulating the testis can be palpated posteriorly. There appear to be two round masses, with an irregular mass in the centre, which extends well up into the inguinal canal, where there is a marked impulse on coughing. This scrotal mass does not transmit light. Left scrotum small; no testis present.

Rectal examination. Prostate normal in size, contour and consistency; right seminal vesicle considerably enlarged and soft, and extends up as far as the finger can reach; left seminal vesicle small and firm. Urine: clear, dark, amber; acid, 1019; no albumin or sugar. Microscopic: no pus; many urates.

Operation. May 30th, 1918. For congenital dual testes in right scrotum with congenital hernia. By Dr. MacKenzie. Ether by Dr. Grant. Right inguinal incision; inguinal canal opened; cord large, hard and continuous to scrotum; hernial sac identified, freed, ligated at neck and resected. Mass consisted of two moderately sized testes in right scrotum with large mass between, which extends up the canal and down the course of the Vas—seems to be continuous with right seminal vesicle. One testis was freed, placed in warm gauze with pampiniform plexus and Vas intact. The other testis with oblong mass attached was freed to attachment to seminal vesicle, ligated and here severed with cautery and removed en mass. The first testis was replaced in scrotum and wound closed by Bassini method. Convalescence uneventful.

Pathological Report

Mass from right side of scrotum. Specimen received was removed from the right scrotal sac, and consists of a well-formed testicle of normal size and apparently intact tubules. Quite closely attached to it, is an elongated slightly pear-shaped organ measuring 9·5 x 4 cms., which is hollow, and on being opened presents a well-formed mucus membrane, supported by a thick muscular wall. This organ-like structure (uterus) was lying above the testicle in the lower part of inguinal canal, the larger end being dependent. And to the left lower aspect a well-formed Fallopian tube 6 cms. in length is attached. This tube shows a rudimentary fimbriated extremity and a small cystic pedunculated structure, which apparently corresponds to a cyst of Morgagni. A well-marked epididymis can be palpated on the posterior surface of the testicle and from this a tortuous tube (Vas) runs up on the posterior surface of uterus and towards its upper extremity becomes embedded in its posterior wall, but cross section shows a well-marked lumen. Surrounding this cord, and embedded in the connective tissue are a number of smaller cord-like structures, some of which have a very definite lumen; others appear obliterated. Running along the left margin of uterus is another quite thick cord-like structure, which takes origin near the isthmus of the Fallopian tube and becomes embedded towards the upper end in the wall of the uterus. The upper end on section shows only a minute central lumen, while toward its other end is apparently convoluted and on cross section shows three lumina from which can be pressed a whitish fluid.

Microscopic examination. Sections from the uterus show a mucous membrane which is lined by a surface columnar epithelium and consists of a very cellular stroma, cells of which resemble very closely that of a normal uterine mucosa. Embedded in this are a number of tubular glands, which although rather irregularly arranged and tortuous, are lined by a single layer of high, columnar epithelium. The mucosa is supported by a rather vascular, but quite typical muscularis. Diagnosis: *Uterus.*

Sections from the Fallopian tube show a well formed and definite structure consisting of a lumen in which lie folds and projections of mucosa, which are lined by a simple columnar epithelium. This is supported by a muscular layer and covered by a serosa, which shows marked œdema. Quite closely attached to the tube and included in the same section are numerous cross sections of

tubules, which resemble very closely those of an epididymis. Diagnosis: *Fallopian tube* and *tissue from epididymis.*

Section from the testicle consisted of testicular tubules, which are evidently actively functionating, as many spermatozoa can be demonstrated. Diagnosis: *Testicle.*

Sections from the cord-like structure in the posterior aspect of the uterus show a very thick walled muscular tube with a small lumen in which lie a number of papillary projections lined by stratified columnar epithelium. Diagnosis: *Vas Deferens.*

Another section taken from somewhat similar structure lying along the lower wall of uterus show a similar but much smaller vas deferens.

Sections from the rather soft, elongated mass lying near the Fallopian tube, and which was thought possibly to be ovarian tissue, is made up of cross sections of tubules resembling those of epididymis. Diagnosis: *Tissue from epididymis.*

The case belongs to the group of pseudohermaphrodites, and is to be interpreted as result of persistence and development of the Mullerian ducts by which uterus, tubes and vagina are formed in more or less complete fashion, and, of course, remain intimately connected with the male genito-urinary tract, occupying the position of the normal prostatic sinus.

A more detailed account of the embryological explanation of this malformation will be given later with the publication of the case.

The senate of Toronto University has authorized a new degree for students wishing to specialize in any of the multitudinous branches of medical research. B.Sc. (Med.)—Bachelor of Science in Medicine—will be awarded to any student who on the completion of the first three years of the new six year course, with honour standing, spends one year in research work on pre-medical scientific work. On the conclusion of the full six year course, a student may then obtain the degree by putting in a year of research work along the lines of any of the medical branches, such as clinical medicine, surgery, or obstetrics. A high standard will be maintained, and to obtain the degree will require a thorough knowledge of the work.

Editorial

THE CANADIAN PUBLIC HEALTH ASSOCIATION

DURING the last week of May, one of the most important of the eight annual meetings of this Association was held in Toronto. Much of its attraction was due to the imposing programme of speakers and subjects which had been arranged for the session. The outstanding fact is that the new Federal Department of Health seems to have been galvanized into action by the meeting, and to have made use of the occasion to invite some of the authorities to Ottawa to advise on the subject of federal assistance in fighting the venereal problem in Canada.

When the Federal Department of Health was launched in Ottawa during the present session, there were many misgivings that the scheme had not been given the attention it deserved and that the subject was being treated in a half-hearted way. The programme, as outlined by the Minister, certainly indicated that the plan had not been worked out along the broad outlines necessary if it were not to be just the appendage of some larger department.

The scheme of getting the authorities on the venereal disease problem together, if followed by immediate action on the part of the Government, has everything to commend it. At any rate the publicity given the figures, showing the prevalence of syphilis in Canada, should prove a surprise to most citizens and even to some physicians. It was stated that at present there are in Canada half a million people suffering from syphilis. It is discouraging, though, to see how few of the newspapers will even mention the name of this disease. The desire to have Canada continue her ostrich-like policy in educating the people in venereal matters, seems still prevalent.

The recent influenza epidemic was discussed at length at the meetings. The members were not agreed as to the value of the regulations imposed in certain parts of the country. New York City was mentioned as having fewer cases per capita than many other localities, where all public gatherings were forbidden. On the question of vaccines nothing new was brought forward and the disappointing results they gave were reflected on by several speakers.

The question of requiring medical certificates before marriage was gone into again. The value of the discussion was due entirely to the publicity given the matter by the press. The same may be said of mental hygiene. It is only by constantly bringing these questions into the open that we can expect to get our legislative authorities to act. Unfortunately our governments seldom lead in health matters; they act, and with hesitation, only when forced by public opinion.

POST-GRADUATE WORK IN GREAT BRITAIN

ALL Canadians must be interested in the really serious attempt being made by the profession in England to establish this work on a basis that will make it attractive to students the world over. This move was first made by Sir William Osler while the war was still in progress, and when it was realized that the German and Austrian schools would no longer be able to attract the students from the allied countries. To his foresight and magnetism must be attributed the early organization work that has been going on quietly during the last two years, and which has culminated in the recent visit of Sir St. Clair Thompson to Canada and America.

So many Canadian and American medical men have had the privilege of seeing London more or less intimately during the war that the chance of going back there for a post-graduate course will always be a pleasing anticipation. That the

clinical material there is varied and abundant is unquestionable. London, owing to its vast size and because it is the greatest shipping point in the world, is undoubtedly able to supply examples of diseases contracted in all parts of the world.

Berlin and Vienna by their perfect organization were able to control post-graduate work. The English hospitals made few attempts to wrest this position from them. Visiting doctors were received politely in London, but there was no desire to make things attractive for them so as to induce them to get the instruction needed for doing special work.

The Reception Committee, presided over by Sir St. Clair Thompson, has arranged to meet students on their arrival in London, and on finding out their wants will put them in touch with teachers who will be anxious to give them exactly what they desire. In other words, they will supply your wants, whatever they may be, at a price that will make it attractive for you. Libraries, museums and hospitals are being linked into the scheme so as to make it convenient for the students.

It will be a distinct advantage to students to dispense with a foreign language and to be able to complete their work in such a city as London. The scheme, if worked out on the lines suggested, should be a success at any rate as far as the students from the Empire are concerned.

Dr. Addison, who is at the head of the new British Ministry of Health, believes it possible to frame a comprehensive scheme big enough for a big ideal. He means "to improve the national armour against disease" by the projected consolidation of efforts under the financial assistance of the state. Addison has pointed out that the business of the health ministry does not begin and end with hospital matters. In addition to regular clinics in the larger centres

of population, it is proposed to organize portable clinics and laboratories. There is to be a great development of maternity and nursing services in Britain. There is to be an organization of facilities for diagnosis. The keynote of the ministry's campaign is to be prevention. All branches of sanitation and preventive medicine will be initiated. In a broad sense the organization will be that of a medical intelligence department quite as much as that of an administration bureau. Summarized, the people are to be told plainly and as often as possible what is to be expected from them to maintain the public health, and there is to be a continual campaign of publicity showing why such education is necessary. An Advisory Council will be formed of men, experienced and capable, who will give advice and criticism in local government, medical, insurance, scientific and health matters generally. Machinery has to be devised whereby the great professions outside, and, above all, public opinion can make their influence felt in the modelling of policy.

Dr. Addison desires to impress the fact that the function of the new movement is to supplement, not to supplant, the work of the practitioner, whose position will be in no way interfered with. To endeavour to keep as many people as possible as well as possible, and to insure that no sick person shall lack adequate care and attendance, may necessitate new posts and create a demand for many physicians; but any work in the direction of diagnosis and therapy must be conducted under such auspices as will carry professional opinion. The hospitals and other institutions that have heretofore been maintained by voluntary contributions need neither be abolished or turned into state establishments. They should be assisted in return for services that they may be invited to render.

With regard to established governmental research bureaus in medicine, some concern has been expressed if the new scheme is put in to operation. There is no question that a ministry of health should have a department for scientific

investigation, which is the very backbone of progress. But there is a medical research committee already in existence as a permanent institution created under the English national insurance act. To some it has seemed advisable that this should continue in an independent existence, because medical research in the broader sense must have a wider sphere than that of national or insular concern. As has been remarked, medical research must deal not with England and Wales, but with the empire. There is much to be said in favour of some individuality and independence of effort in research, even at the expense of some duplication.

General Crowder, of the American army, has expressed the opinion that information gained from the medical statistics of the draft will be the means of saving a hundred times as many lives as were lost in the war. Some of the statistics available already from the records are very interesting. One thing clearly established is that foreign-born registrants were of lower standing physically than the native born. The percentage of mentally deficient was extremely high in the Southern States—probably because of the negro population—while mental diseases and nervous disorders were more prevalent in the North. The percentage of men suffering from easily remediable defects was 2·76, and the percentage of those physically unfit for any kind of service was 16·25. Among the defects of the latter class were included defective hearing and vision, internal diseases, mental disease or deficiency, disabling deformities, muscular paralysis, and, most important of all, physical under-development.

The causes of physical under-development can in most cases be removed by social hygiene campaigns, competent medical supervision in schools and factories, proper exercise and physical training and by a public maintenance of hygienic standards as high as those already observed in civilized homes. Hence this latter class comes especially within the scope of a Federal Health authority.

A GREAT international congress of medical experts to organize a world drive on disease and ill-health is to assemble at Paris. The convention is an inevitable outcome of the war. Under-nourishment has sapped the vitality of entire peoples and races as well as the epidemics springing directly from the struggle. Unless, quickly and widely, the means of resisting disease can be restored, humanity faces the combat of a succession of plagues. In the past the western world has escaped devastating scourges because of its distance from the East; but now all the nations, big and little, are in direct contact, and the reconstruction which will result from a league of nations will produce a closer intimacy. For the safety, health and happiness of the world at large, it will be imperative for the dominant nations to educate the backward brothers out of their uncleanliness and indifference to disease and death. Wide spread hygiene and sanitation throughout China, Russia, Persia, Turkey, Asia Minor and some sections of the Balkans and Central Europe will promote world health by wiping out breeding spots of malignant epidemics. A conference to devise a procedure by which all the nations can unite against contagion is a vital supplementary to the Versailles gathering.

THE first professorship in Clinical Medicine at the University of Toronto, due to the munificence of Sir John Eaton, has been offered to Dr. Duncan Graham, now senior officer on the medical staff of the University Hospital, No. 4, at Basingstoke, England. This gift of Sir John, which is understood to amount to $25,000 a year for a period of twenty years, stands almost alone in the history of the University. In this respect it affords a remarkable contrast to the generosity shown towards other institutions of a similar nature by those who understood and appreciated their advantages. To take one example in Canada, McGill University has been made one of the foremost seats of learning in the world by the

liberality of the citizens of Montreal. Starting with the estate left by its founder, the history of the University recalls at once the names of Strathcona, Macdonald, Workman, Molson, Redpath, Morrice, Greenshields, and many other benefactors who took pride in the development of its different faculties and an active interest in the management of the institution. The University of Toronto is a state institution, and this fact seems heretofore to have diverted the generosity of its citizens into other channels, but no better object could attract that generosity than that of supplementing the assistance given by the Province to the University.

ERRATA

In Dr. G. F. Laughlen's article on "So-Called Trench Mouth and other Manifestations of Vincent's Disease as a spreading Infection in Canada", in the April issue, page 350, appears the following sentence: "A positive Wassermann test, though it bears a relationship to Vincent's disease is often present . . ." This, we are informed by the author, should have read: "A positive Wassermann test, though it bears *no* relationship to Vincent's disease is often present. . . ."

Obituary

DR. W. A. ROSS

Dr. W. A. Ross died at his home in Barrie, Ontario, after an illness of several months, in his fifty-eighth year. He had practised his profession there since 1885, and had a very wide reputation as a successful surgeon. He was prominently identified with the Royal Victoria Hospital, having been a very active member of the hospital board from its inception in 1888. He was coroner of the County of Simcoe for a quarter of a century, and official surgeon of this division of the Grand Trunk Railway. Thirty-four years a member of St. Andrew's Presbyterian Church, he served on the board of managers for more than twenty years. Dr. Ross was a clever physician and a man of fine character, and was very highly esteemed throughout the entire district. His wife and three sons survive.

DR. ARTHUR D. SINCLAIR

Dr. Arthur D. Sinclair, prominent among the younger physicians and surgeons of Toronto, died from double pneumonia on May 25th. His vitality, weakened by incessant labour for the sick in the recent influenza epidemic, was insufficient to cope with the disease which affected him, and he fell a victim after an illness of nearly two weeks.

Dr. Sinclair was the eldest son of the late Dr. John Sinclair, of St. Mary's, Ontario, and was born thirty-six years ago. He held degrees from three American universities, as well as a B.A. from the University of Minnesota. He came to Toronto in 1911, and was for a time associated with Dr. R. D. Henderson, but for the last five years practised independently. Many were overcome on hearing of his untimely death. It was believed by all who knew him that he was on the threshold of a great career in surgery.

MAJOR A. MacCOLL, M.D.

Major A. MacColl, M.D., one of Belleville's best known physicians, died on May 6th, after an illness of some duration. He was fifty-two years of age and was born in Seymour Township.

He graduated from Queen's University in arts and medicine with high standing. He began the practice of his profession in Belleville as a colleague of Dr. Gibson twenty-five years ago. He was surgeon and honorary major of the 15th Regiment, and at the outbreak of the war offered his services to his country and was attached to the Canadian Army Medical Corps, with the rank of major. He was a Liberal in politics, and an Anglican in religion. He is survived by his widow.

DR. LUKE TESKEY

Dr. Luke Teskey, a well-known surgeon and former professor of Trinity College, died on May 1st after several months' illness. He succumbed to acute gastritis, undergoing an operation from which he failed to rally. He had been a prominent medical practitioner in Toronto for forty years. He was in his 71st year. He graduated from Trinity College, Toronto, receiving the degree M.D., C.M., and then went to London, England, where he received his M.R.C.S. From thence he went to Paris, where he took a post-graduate course. After an extended visit to Italy he returned to Toronto, where he established himself permanently. Dr. Teskey had a great deal of experience as a teacher and professor. Previous to graduating in medicine he had taken a course in dentistry. In later years he opened and owned the first dental college in Toronto, the Royal College of Dental Surgeons. For a number of years he was professor of pathology, anatomy and histology at Trinity Medical School At the same time he had an extensive practice and contributed largely to medical literature and research. Latterly he gave his entire time to surgery, until his retirement five years ago.

The sudden death of Dr. Sylvanus Keith, of New Glasgow, Nova Scotia, has caused widespread regret. He was a great favourite in the locality, and had practised there for many years. He was a skilled physician and did a great deal of work among the poor for which his only recompense often was the gratitude of the recipients. When the call of the sick and suffering came he was always ready and quick to respond. Dr. Keith was born at Stellarton, his death at the comparatively early age of fifty-nine may be attributed in large measure to over-devotion to duty.

Dr. Robert Campbell Macgregor died suddenly at the King's Daughters' Hospital, Duncan, on April 2nd. He was born

in Scotland in 1868. He graduated from the Universities of Glasgow and Winnipeg with the degrees of M.A. and M.D. In 1913 he took up his residence in Duncan. Although of a retiring disposition, he had many friends who held him in high esteem.

Dr. James McClay Young, graduate of Western University Medical School, in 1917, and later a house surgeon on the staff of the Victoria Hospital, died on May 9th, of influenza. He was thirty-four years of age.

Eli Thomas Ede, M.D., died in Galt on May 30th. He was born in Essex County, Ontario, graduated in medicine from Toronto University, and then continued his studies at Edinburgh and London, where he obtained the degrees of L.R.C.P. and F.R.C.S. Subsequently he qualified for service in the British Royal Navy. In 1886 he retired from the Navy and returned to Canada, taking up private practice in various parts of the country. He took a very active part in war work, especially in recruiting, his energies being directed chiefly to assisting the Navy League organization. He was a prominent public speaker and his addresses during the past winter will always be remembered as fine examples of the art of oratory. He leaves a widow but no family.

Dr. Edward Botsford Chandler died on May 13th, of heart failure with complications. New Brunswick loses in him one of her leading physicians, and Moncton one of her best and most respected citizens. Dr. Chandler graduated from the New York College of Physicians and Surgeons fifty years ago, and since that distant period has continuously enjoyed an extensive practice in his native province. He was recognized throughout the Maritime Provinces as a diagnostician of great merit, and his services were much sought in a consulting capacity. He loved his profession, and was a true and candid friend. He was in turn greatly beloved by his patients and leaves a void it will be difficult to fill.

Miscellany

News

MARITIME PROVINCES

The Provincial Government of Nova Scotia have appointed as assistant physician in charge of the women's wards of the Nova Scotia Hospital, Dr. Eliza Kilpatrick. Dr. Kilpatrick has had several years experience as assistant physician at the Northampton State Hospital, Mass.

W. H. Hattie, Provincial Health Officer, issued a notice in Halifax early in May to chairmen of the local boards of health calling their attention very specially to the small pox situation in the province. He pointed out that the mildness of the majority of the cases made its control more difficult, and also its discovery, hence the need for the authorities to be on the alert and meet out prompt and vigorous action in dealing with any case which may appear. Dr. Hattie took a strong stand on the enforcement of vaccination and on the rules for quarantine required by the Public Health Act.

On May 29th was held the Convocation for the conferring of degrees in the Faculties of Medicine and of Dentistry at Dalhousie University. Nine men and one woman received the degrees of M.D., C.M., and four men and one woman the degree of D.D.S. The graduation ceremony was carried out by President MacKenzie, D.C.L., and Lieutenant-Colonel A. J. MacKenzie, Officer Commanding the military hospitals in Halifax, addressed the graduates, Following him the Rev. Captain H. A. Kent, D.D., Professor of Hebrew at Pine Hill Presbyterian College, Halifax, gave a vivid account from personal knowledge gained overseas of the splendid work done by the entire personnel of the C.A.M.C. The criticisms recently made were directed, said Professor Kent, solely at the methods of organization of that branch of the service and not at all at its professional efficiency.

Undergraduate prizes were awarded for Practical Anatomy

(First Year), by Professor Cameron, to H. S. Dolan, and for Practical Histology (First Year), by Professor Fraser Harris, to P. St. Clair Irwin.

The graduate prizes were two University medals awarded in the Faculty of Medicine to Charles Grant Bain; in the Faculty of Dentistry to Michael Clarence Connors.

The New Brunswick department of health recently issued the first Annual report of the chief medical officer, Dr. G. G. Melvin, for the year ending October, 1918. As the new public health act was made effective in October last, the report deals almost entirely with matters as they existed under the former health act. Included in the report are those of the local health boards, that of Dr. Hannington, medical school inspector for St. John, and the first annual report of the provincial laboratory by Dr. H. L. Abramson, which dates from July, 1918, when the newly created laboratory began its service. Dr. Abramson acts as adviser to the physicians of the province in the matter of administering sera and vaccines. The Wassermann test for syphilis will be added to the equipment. Influenza vaccine sufficient for 20,000 was distributed through the medium of the laboratory. The total cost of the laboratory was in the vicinity of $4,000, and the budget estimate for maintenance for the coming year is fixed at $1,000, which grant Dr. Abramson does not consider sufficient to do justice to the work proposed to be carried out.

Dr. Melvin culled the following figures from the local health district reports regarding small pox: The total number of cases reported for the province were 3,794, a total that does not reflect creditably upon the system of public health administration at that time, especially in view of the fact that many cases probably were not reported. Dr. Melvin pointed out that the regulations in regard to vaccination found in the new health act will, in a few years, make such epidemic of small-pox impossible. The number of cases recorded in local reports is as follows: Madawaska, two hundred; Victoria, two hundred; Restigouche, two hundred and twenty; St. Stephen, one; Gloucester, one thousand nine hundred; St. George, twenty-five; Westmoreland, twenty; Sunbury, one; Grand Manan, six; Northumberland, two hundred and fifty-one; Kent, four hundred and thirty-five; Quense, thirty; Carleton, forty; Edmunston, seven; Fredericton, one; Moncton, thirty-seven; St. John, forty.

THE Federal Government has agreed to grant $62,500 to the St. John General Public Hospital. The notification comes through Dr. G. A. Baddy, one of the hospital commissioners. This sum goes towards the expense of caring for sick mariners and will provide for twenty-five beds on a basis of $2,500 each.

QUEBEC

THE title of Member of the Consulting Board of the Connaught Antitoxen Laboratory has been bestowed on Dr. Arthue Vallée, the well-known physician, bacteriologist, and professor at Laval, Quebec city. He has been appointed to this post by the Board of Directors of the University of Toronto, to replace the late Dr. E. P. Lachapelle, of Montreal.

THE seventh annual report of the District of Bedford General Hospital, Sweetsburg, was read at the annual meeting, when the treasurer announced that the small standing debt on the hospital had, through recent gifts of money, been met, and the institution was now clear of debt. The total expenses for the year was $3,274.88, leaving a balance of $310.30. In the training school, one hundred and eight applications have been received.

A DELEGATION of nearly one hundred representatives of charitable and benefit societies waited upon E. R. Decary, chairman of the Administrative Commission, to urge the establishment in the city of Montreal of a hospital for curable cases of pulmonary tuberculosis. Dr. J. E. Dubé, of the Bruchesi Institute, acted as spokesman and insisted on its necessity, outlining various plans which had been presented as solutions of the problem. Mr. Decary, in reply, said that the commission realized the need of such an institution in Montreal, that the Mont Lasalle building was under consideration for the purpose and that a plan was being prepared by the city medical health officer. He suggested the delegation go before the provincial authorities to ensure the support of the provincial government and to obtain the promise of financial assistance. Among prominent members of the delegation were Senator Beique, Professor Falk, of McGill University; Canon Arbeur and Canon Cousineay represented Archbishop Bruchesi, and Rev. H. A. Benoit represented Bishop Farthing.

The Baby Welfare Conference and Exhibit was opened on May 12th in Montreal and continued all the week with three evening sessions. Among the many features of the exhibit exciting attention was the Charity Organization Society's material protest against unsanitary housing conditions and the booth operated by the Montreal Maternity Hospital, which showed the prevalence of unnecessary blindness, and advocated measures for the care of the baby's eyes.

The final and primary examinations of the Pharmaceutical Association ended recently. Eight men passed as Licentiate of Pharmacy and eleven as assistant-pharmacist. The examiners were Messrs. O. St. Armour, Ste. Agathe des Monts; A. R. Farley, Hull; O. H. Tansey, Montreal; A. F. Francœur, Quebec; M. Letourneau; L. S. Desautels, J. E. Barnabe, President, and H. J. Pilon, Secretary, Montreal.

A Canadian National Council for combatting venereal diseases has been formed at Ottawa. It has been addressed by Sir Robert Borden, who promised the co-operation of the government in the carrying out of a campaign against these diseases. Mr. Justice Riddell, of Toronto, has been appointed chairman. It is proposed to ask the government to get behind the Dominion Council for the suppression of social vices, to afford every facility for the treatment of venereal disease, and for the establishment of clinics where cheap or free salvarsan will be available.

Probably the first health census that has ever been attempted in any city in Canada was inaugurated recently at Ottawa. The census was to be taken in co-operation with the Board of Health. The organization was very carefully prepared under experienced heads and the census will be very thorough and systematic. The city was sub-divided into forty districts of, as nearly as possible, equal population. The taking of the census necessitated a house to house canvas, in which it was estimated about seventy-five societies participated. Representatives of various societies were allotted different districts. The census will secure to the Board of Health and the Ottawa Health Society the possession of an important fund of information to be turned to great use in improving the health conditions of the city, an in combatting an epidemic should another one occur.

THE Hon. Dr. Beland, member for Beauce, moved a resolution in the House to prohibit the manufacture, importation or sale of all patent medicines containing opium and its derivatives intended for internal use. He launched a drastic attack on "the so-called soothing syrups". A number of medical men amongst the legislators took equally strong ground and directed a withering fire against a wholly inadequate clause in the Patent Medicines Act.

THE annual report of the Ottawa City Disinfector, R. J. Smith, showed an increase in cases of scarlet fever and a decrease in diphtheria. The disinfections for scarlet fever totalled five hundred and forty-one compared with two hundred and forty-seven last year, the number of diphtheria disinfections was fifty-two compared with four hundred and forty-one in 1917. Special attention was paid this year to disinfecting houses where there had been cases of tuberculosis, one hundred and forty-two being disinfected, as compared with one hundred and sixteen in 1917. There were eighty-six school disinfections as against forty-sever the year before, and twelve disinfections for small-pox compared with three in 1917.

ONTARIO

THE Venereal Disease Act passed by the Provincial Government provides for the compulsory notification of venereal diseases to local officers of health who, in turn, must report to the provincial board. Since last July, 1918, when it came into force, twenty-four hundred and forty-nine cases have been reported. Dr. McCullough, Provincial Health Officer, holds the Dominion Government responsible for the unsatisfactory manner in which the Provincial Venereal Disease Act is working out. The Act, and the machinery created for its enforcement, leave nothing, he thinks, to be desired in the fight against this scourge; but the action of the Federal Government in refusing a license to the provincial authorities to manufacture salvarsan—the drug which will effect the cure of venereal diseases—makes it impossible to fight it as successfuly as it can be fought. An application for the right to manufacture the drug in this provice was made by the Provincial Board of Health in 1917. The application was refused, and a second was filed two months ago, but nothing has transpired. If this application were granted, treatments of venereal disease could be given at about fifty cents, whereas now the cost is about two dollars.

Dr. McCullough is firmly of the opinion that if a permit were given the Provincial Board of Health to allow salvarsan to be manufactured in Ontario, an effective step would be taken in the fight against this disease.

Mr. Justice Hodgins, who made an investigation into the extent of venereal diseases, holds a similar view to that of the Provincial Board of Health, that a license should be granted. He considers the action of the Dominion authorities to be a "national mistake". He says in his report: "Salvarsan, a medical necessity under various names, in dealing with venereal diseases, is protected by a German patent. In Canada, only two licenses to manufacture it have been granted, and 5 per cent. of the gross sales have been reserved, presumably for the ultimate benefit of the German owners. Only one licensee, the Synthetic Drug Company, has made any progress in producing it, although the licenses were granted in 1915, and the Patent Commissioner has refused to allow the Provincial Board of Health in Ontario to manufacture it."

Medical service is now provided in ninety-two public schools and twenty-six separate schools in Toronto, with 97,000 pupils. Last year 17,000 complete physical examinations were made in the schools, and 9,200 children were found with defects other than those of teeth. Thirty-one thousand dental examinations disclosed 23,000 teeth defects. The Educational Department has completed arrangements for the medical survey of the children attending Ontario schools, and a practitioner will carry on a dental survey at the same time.

The Academy of Medicine, Toronto, held its twelfth annual meeting on May 6th. Reports of the various committees for the past year were presented. The financial statement of the honorary secretary was excellent. One hundred and thirty-two fellows of the Academy have served overseas and these are now gradually returning. There were a large number of fellows elected furing the year, the fellowship being now over five hundred. The officers and members of the council were elected for the session 1919-20.

Dr. Forbes Godfrey's Marriage Bill, after having been voted down in the Legislature recently, because of the principle involved, was reconsidered by a special committee. The Bill is to be held over till another session, though considerable merit is admitted by the members of the committee. It aims at making it compulsory

for contracting parties seeking marriage to produce a certificate of health showing that neither party is the victim of communicable disease, including tuberculosis, and to secure such affidavit, a change in the system of issuing marriage licenses is suggested.

The last meeting of the University Hospital Supply Association was held in Toronto University four years from the day of its organization. The President, Lady Falconer, gave a brief address reviewing the fortunes of the association from its feeble beginning, till it grew into one of the most wonderful war organizations of the country. During the four years of war, $121,107.25 was raised, and $117,007.21 disbursed, leaving a balance of $4,100. The grand total of surgical articles sent overseas was 1,808,257. A total of 347,392 articles were shipped in 2,497 cases. A discussion took place as to how the surplus four thousand dollars should be used, and finally it was decided to divide the amount evenly between Pearson Hall and the Orthopædic Hospital.

The Ontario Medical Association held its annual meeting in Toronto, between May 27th and 30th. Several distinguished medical men from Great Britain were present, these representatives being: Sir St. Clair Thomson, Lieutenant-Colonel Sir Shirley Murphy, Admiral Dimsey, Major Grooves, Sir St. Clair Thomson addressed the gathering on the post graduate medical work in England. He referred to the establishment of a Fellowship in Medicine, which would enable medical men in Canada to take advantage of the post-graduate courses in special lines of work which English institutions were offering. Many other addresses were given by notable speakers. Professor J. Maurice Slemons, Yale University, delivered an address on obstetrics. Commissioner George A. Kingston dealt with the relation of the Workmen's Compensation Act to the medical profession. One of the features of the convention was a "Symposium on Influenza", in which various aspects of the disease were discussed.

The Canadian National Committee for Mental Hygiene held its first annual meeting at the Toronto General Hospital recently. Delegates from every part of Canada attended. A plea for better and more careful treatment of the insane was made by Dr. C. K. Clarke. In connection with the scheme of the Committee to hospitalize the insane institutions, he also stated that it would be very difficult to force public opinion to act as long as the insane

asylums were under the control of provincial governments. The only hope was in the appointing of a commission of independent commissioners who have the welfare of the insane at heart. Manitoba had asked for a survey of her institutions with rare courage, and had acted upon the advice given. Preventive methods were necessary, and also careful supervision of individual patients at the asylums by a force of field workers in psychiatry. Through the co-operation of the University of Toronto, the Department of Public Health, the asylums of Mimico and Toronto, and the Social Service Department of the Toronto General Hospital, this course had been made possible and a trained force of workers in this branch would soon be available.

The Department of Soldiers' Civil Re-establishment has decided to establish a Dominion sanatorium for men returning from overseas suffering from tuberculosis, domiciled in Ontario. In 1917, negotiations were entered into with the Ontario Government for the erection of a central sanitorium. Half the cost is to be borne by the Dominion and half by the Provincial Government. It has been deemed advisable, however, that the Federal Department should erect its own sanitorium and the site secured by the Ontario Government has been taken over at a cost of $18,000.

In the graduating class of the Medical Department of Western University, London, W. H. Morrison, who won first class honours in the third, fourth and fifth year of his course, carried off the gold medal: E. M. Watson is the silver medallist.

When the Ontario College of Pharmacy Council met in session recently, the President, gave notice that more than a hundred applications had been received from students who desired to have military service count on their term of apprenticeship.

ARMY MEDICAL SERVICES

The Distinguished Service Order has been awarded to Major Charles F. Knight, M.D., R.A.M.C., formerly of Toronto, and later a practitioner in Moose Jaw, Saskatchewan.

Lieutenant-Colonel D. P. Kappele, M.D., of Hamilton, has lately been awarded the Bar to the Distinguished Service Order.

JOHN F. BURGESS, M.D., C.A.M.C., of Owen Sound, has been gazetted an Officer of the British Empire.

AT an investiture at Buckingham Palace recently, the Military Cross and Bar was awarded to Captain Frederick Campbell, Medicals.

THE Military Cross was awarded to Major Herbert Cumming, Medicals.

THE Military Cross has been awarded to Captain C. T. Lewis, M.D., C.A.M.C.; Major William Ewing, M.D., C.A.M.C.; Captain Roy Jenkins, M.D., C.A.M.C.

THE Military Cross and Bar has been awarded to George Smith, Medicals.

THE Military Cross has been awarded to Thomas Barclay, Medicals.

THE Red Cross has been awarded to Nursing Sister Lilla Car-Harris.

THE names appear in the King's birthday honour list of the following medical men who have been created Officers of the Order of the British Empire: Clifford Reason, Frederick Young, Arthur Ellis, Arthur Jones, Lorne Jones, Russell Robertson, Peter Stewart, Harry Marshall, James Marshall, Herbert Martin, William Richardson, Samuel Straight, John Ward, all of the C.A.M.C. Member of the Order of the British Empire, Frederick Thom, C.A.M.C.

THE distinctly national side of the Red Cross work has been shown in the task which it was asked to assume in connection with the return of the soldiers' dependents to Canada. It has been spending in the neighbourhood of $1,500 per week for this purpose. There has been entailed the enrolment of a staff of nineteen nurses who accompanied each of the five trains from each boat, and, in addition, staffed the emergency hospital which was established over night and taken as an annex to the Military Hospital under the direction of an Army Nursing Sister. A Red Cross nurse accompanied the Port Doctor on each ship to record and tag the hospital cases, and she or other nurses went with the am-

bulances to the hospital. An idea of the enormous labour involved can be gained when on January 1st, it was reported that 50,000 women and children were coming to Canada, but a later statement in March appeared affirming there would be double that number.

THE Orthopædic Hospital has been made the recipient of numerous gifts from the Toronto Red Cross Society. The Home Service Department of the Red Cross, moreover, reports that in all $10,580.83 have been disbursed in useful gifts to the hospitals of the city.

DR. E. RYAN, Unit Medical Director, Department of Soldiers' Civi. Re-establishment, has resigned his position after three years' military service, and will return to his former duties as Medical Superintendent of Rockwood Hospital, Kingston. Dr. Ryan, while in charge of Military District No. 1 and 2, built up therein a splendid organization in the various departments of medicine and surgery and research work In social service work the organization has been perfected, and the different sections placed in the hands of men of well tried experience.

Appointments:—

Lieutenant-Colonel John Addy Sponagle is posted for duty as Officer Commanding Camp Hill Hospital, vice Lieutenant-Colonel D. A. Whitton.

Captain Clair Locklesy Douglas is posted for duty under the A.D.M.S., military district No. 2.

Major Archibald Francis Macaulay is posted for duty under the A.D.M.S., military district No. 1.

Captain John Ferguson Cooke Foster, on ceasing to be attached to Clearing Services Command is posted for duty under the A.D.M.S., military district No. 4.

Captain William Martyn ceases to be attached to the Clearing Services Command, and returns to military district No. 2.

Major Robert Mayrand is posted for duty under the A.D.M.S., military district No. 5.

Lieutenant-Colonel Edward Albert LeBel ceases to command the Quebec Military Hospital, and is transferred to demobilization district No. 5 for medical treatment.

Acting Major Alfred Chatwin Scott is detailed to perform the duties (temporary) of Deputy Assistant Director of Medical Services, Sanitation, military district No. 12.

Lieutenant-Colonel Edward Vincent Hogan is posted for duty under the A.D.M.S., military district No. 6.

Captain John Douglas Adamson is posted for duty under the A.D.M.S., military district No. 10.

Temporary Major (acting Lieutenant-Colonel) W. H. Merritt relinquishes the acting rank of Lieutenant-Colonel on ceasing to be employed at Canadian Special Hospital, Etchinghill.

Captain William Ezra Graham is posted for duty under the A.D.M.S., military district No. 13.

Captain James Giles Robinson Stone, from the office of the D.G.M.S. Military Headquarters, Ottawa, is posted for duty under the A.D.M.S., military district No. 2.

Captain Percy Lorne Layers ceases to be attached to the Clearing Services Command on transfer to demobilization district No. 6, for medical treatment.

Lieutenant-Colonel Anson Scott Donaldson is posted for duty as Officer Commanding Ogden Military Convalescent Hospital vice Captain J. S. F. Marshall.

Captain Arthur Buller Ritchie is posted for duty under the A.D.M.S., military district No. 2.

Captain Harold Edward Skeete, from C.E.F.S., is posted for duty under the A.D.M.S., military district No. 4.

Promotions:—

To be Captain:—Lieutenant John James Andrews; Lieutenant George Ahern.

To be Acting Major:—Captain Kenneth Grant Thabir.

Lieutenant Norman Thomas Beeman to be Captain.

Captain Frederick James Colling to be Major.

Lieutenant Roy Dickson Lindsaye to be Captain.

Captain William Richard Colese to be Major.

Returned from Overseas:—

The undermentioned officers are returned from overseas on general demobilization for further duty:—Lieutenant-Colonel Samuel Harvey McCoy; Captain Arthur Kellogg Connolly; Captain James Fraser Ellis; Colonel George Septimus Rennie; Lieutenant-Colonel Anson Scott Donaldson; Lieutenant-Colonel George Sydney Mothersill; Captain Joseph Wark; Captain Robert S. Patrick Carruthers; Lieutenant-Colonel Fred Armstrong Young; Lieutenant-Colonel Francis A. Scrimger, V.C.; Major Frederick William Lees; Major Frederick Adam Cleland; Captain William Thompson Kennedy; Captain John Leslie King; Captain G. H. Lansdowne.

Book Reviews

INTERNATIONAL CLINICS. A Quarterly. Edited by H. R. M. LANDIS, and others. Volume III., twenty-eighth series, 1918. Publishers: J. B. Lippincott Company, Philadelphia, London and Montreal.

This volume is up to the usual standard so long maintained by this firm of publishers. The subjects taken up are so varied that every medical men, no matter what his specialty, may find something of interest. The subjects are necessarily taken up in a superficial way, but this is an advantage to most practitioners, who have not the time to go deeply into the more intricate problems, that require an elaborate equipment for their usefulness to be worked out.

RECONSTRUCTIVE SURGERY IN PEACE. Based on Orthopædic Surgery in War. By A. MACKENZIE FORBES, M.D., C.M. Reprinted from a series beginning in February issue, 1919, of The Medical Council. 420 Walnut Street, Philadelphia, Va.

This book is based, not only on the author's experiences in the War, but on personal communications he has had from many friends, who have been working in this particular field. It is full of little hints, not only of what to do, but also, of what not to do. The latter quality, alone, gives the brochure a value and use, seldom found in larger and more pretentious works. It is simply written in a didactic form and contains no illustrations. To the man doing fractures or bone work, who finds many of the difficulties are not explained in the large volumes, this small book is recommended.

INTERNATIONAL CLINICS. A Quarterly. Edited by H. R. M. LANDIS, and others. Volume IV., twenty-eighth series, 1918. Publishers: J. B. Lippincott Company, Philadelphia, London and Montreal.

This volume contains considerable material from the recent war, both in medicine and surgery. Many old subjects, such as cleft-palate and ruptured bladder, are treated with, but generally

from a personal point of view, that makes them attractive reading.

An unusual amount of space has been devoted to the orthopædic branch of surgery. This subject is well handled and makes very interesting reading.

The whole volume admirably fulfils the scope intended for it—of giving the latest teaching on the different subjects in a simple attractive form so as to appeal to the busy practitioner.

ROENTGENOTHERAPY. By ALBERT FRANKLIN TYLER, B.Sc., M.D., professor of clinical roentgenology, John A. Creighton Medical College. 162 pages, with 111 illustrations. Price, $2.50. Publishers: C. V. Mosby Company, Metropolitan Building, St. Louis, Mo.

This little book is designed for the beginner in Radiography, and right worthily does it fulfil that object. In its 162 pages it has no less than 111 illustrations, many of which are of cases of disease before and after treatment with Röntgen rays. We think it is unfortunate that "Roentgenotherapy" instead of Radiotherapy" is made the title of the book. Roentgen has the great misfortune to belong to a nation no longer inside the pale of moral culture; he discovered one property of these rays accidentally, and all the subsequent work on the applicability of these rays to surgery and therapeutics was done by others. The book is certainly all that the preface claims for it.

NERVE INJURIES AND THEIR TREATMENT. By Sir JAMES STEWART, K.C.M.G., C.B., M.D., F.R.C.P., senior physician to the Westminster Hospital; and ARTHUR EVANS, M.S., M.D., F.R.C.S., surgeon and lecturer on surgery at the Westminster Hospital. Oxford Press, London; Second edition.

THE second edition of this book is an improvement on the first. For the general practitioner and the neurologist and orthopædic surgeon as well, it is a most valuable work. The first part is devoted to a discussion on anatomy and physiology of nerves and pathology of lesions. Then follows a general description of examination, diagnosis, prognosis and treatment. Finally lesions of the different nerves are dealt with individually. The arrangement of the subject matter is in a comprehensible form and the whole is written in the authors' lucid style. A valuable feature of the book is the brief but adequate references to anatomy, descriptive

of the different nerves as each is dealt with. Each lesion is illustrated by succinct notes, excellently prepared diagrams or actual photographs of appropriate cases. It is to be hoped that future editions will give further observations on post-operative treatment. Considering the number of war injuries to nerves which will be everywhere seen for the next few years, this work will be of special interest to the profession generally.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

Essentials of Surgery. A Text-Book of Surgery. For Student and Graduate Nurses and for those interested in the care of the sick. By Archibald Leete McDonald, M.D., The Johns Hopkins University. 265 pages with illustrations. Price $2.00. Publishers: J. B. Lippincott Company, Philadelphia, London and Montreal, 1919.

Second Interim Report of the Public Welfare Commission of Manitoba. Printed by Order of Legislative Assembly of Manitoba, February, 1919. Printer: Philip Purcell, Winnipeg, 1919.

A Text-Book of Practical Therapeutics. With Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc., professor of therapeutics, materia medica, and diagnosis in the Jefferson Medical College of Philadelphia. Seventh edition, 1023 pages, enlarged, thoroughly revised, and largely rewritten, illustrated with 145 engravings and 6 plates. Price $5.50. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

ELEMENTARY BACTERIOLOGY AND PROTOZOOLOGY. For the Use of Nurses. By HERBERT FOX, M.D., director of the William Pepper Laboratory of Clinical Medicine in the University of Pennsylvania. Third edition, thoroughly revised; 222 pages with illustrations. Price $1.75. Publishers: Lea & Febiger, Philadelphia and New York, 1919.

A TREATISE ON ORTHOPÆDIC SURGERY. By ROYAL WHITMAN, M.D., M.R.C.S., F.A.C.S. A director of military orthopædic teaching. Sixth edition, thoroughly revised; 914 pages with illustrations. Price $7.00. Publishers: Lea & Febiger, Philadelphia and New York, 1919.

PENSIONS AND THE PRINCIPLES OF THEIR EVALUATION. By LLEWELLYN J. LLEWELLYN, M.B., late temporary member Appeals Tribunal, Ministry of Pensions; and A. BASSETT JONES, M.B., Military Orthopædic Hospital, Whitchurch. With a a section on PENSIONS IN RELATION TO THE EYE. By W. M. BEAUMONT, acting ophthalmic surgeon to the Bath War Hospital. 702 pages. Publishers: William Heinemann (Medical Books), Ltd., London, 1919.

THE BLIND; THEIR CONDITION AND THE WORK BEING DONE FOR THEM IN THE UNITED STATES. By NARRY BEST, PH.D. 763 pages. Publishers: The Macmillan Company, New York, and Toronto, 1919.

THE PRACTICAL MEDICINE SERIES. VOLUME I, GENERAL MEDICINE. Edited by FRANK BILLINGS, M.S., M.D., head of the medical department, and dean of the Faculty of Rush Medical College, Chicago. Series 1919. Price $2.50. Publishers: The Year Book Publishers, 304 S. Dearborn Street, Chicago.

MILITARY SURGERY OF THE EAR, NOSE AND THROAT. By HANAU W. LOEB, M.D., Major, Medical Reserve Corps, U.S.A. Price $1.25. Publishers; Lea & Febiger, Philadelphia and New York, 1918.

SIR WILLIAM TURNER, K.C.B., F.R.S., professor of anatomy and principal and vice-chancellor of the University of Edin-

burgh. A Chapter in Medical History. By A. Logan Turner, M.D. Price 18/- net. Publishers; William Blackwood & Sons, Edinburgh and London, 1919.

The Intensive Tteatment of Syphilis and Locomotor Ataxia by Aachen Methods (with Notes on Salvarsan). By Reginald Hayes, M.R.C.S. Third edition, revised, 92 pages. Price 4/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London.

Medical Quarterly. Volume I, No. 2. Department of Soldiers' Civil Re-establishment. Editors: Lieutenant-Colonel F. McKelvey Bell; Lieutenant-Colonel J. L. Biggar. Ottawa, April, 1919.

Quarterly Medical Clinics. A Series of Consecutive Clinical Demonstrations and Lectures. By Frank Smithies, M.D., F.A.C.P., associate professor of medicine, School of Medicine, University of Illinois. Price $1.50. Publishers: Medicine and Surgery Publishing Company, Metropolitan Building, St. Louis, 1919.

Tuberculosis of the Lymphatic System. By Walter Bradford Metcalf, M.D., associate in clinical medicine, University of Illinois, College of Medicine. Publishers: The Macmillan Company, Bond St., Toronto, 1919.

United States Naval Medical Bulletin. Report on Medical and Surgical Developments of the War. By William Seaman Bainbridge, Lieutenant Commander, Medical Corps, United States Naval Reserve Force. Washington, Government Printing Office, January, 1919.

An Inquiry into the Medical Curriculum by the Edinburgh Pathological Club. Papers Contributed to the Inquiry and Report by the Pathological Club. Publishers: W. Green & Son, Edinburgh, 1919.

The Johns Hopkins Hospital Reports. Volume XVIII, Fasciculus II. Annual Report of the Department of Pathology of the Johns Hopkins University and Hospital. Price $3.50. Publishers: The Johns Hopkins Press, Baltimore, 1917.

CHRONIC TRAUMATIC OSTEOMYELITIS, ITS PATHOLOGY AND TREATMENT. By J. RENFREW WHITE, M.B., F.R.C.S., formerly resident surgical officer, Roy National Orthopædic Hospital, London. 144 pages with illustrations. Price 12/6 net, Publishers: H. K. Lewis & Co., 136 Gower Street. London, W. C. 1, 1919.

COMPENDIUM OF HISTO-PATHOLOGICAL TECHNIC. By EMMA H. ADLER, formerly technician pathological laboratory, Presbyterian Hospital, New York. 92 pages. Price, $1.25. Publishers: Paul B. Hoeber, 67 East 59th Street. New York, 1918.

INFORMATION FOR THE TUBERCULOUS. By F. W. WITTICH, A.M., M.D., instructor in medicine and physician in charge of Tuberculosis Dispensary in the University of Minnesota Medical School. 150 pages. Price, $1.00. C. V. Mosby Co., St. Louis; McAinsh & Co., Limited, Toronto, 1918.

INTERNATIONAL CLINICS. A Quarterly. Edited by H. R. M. LANDIS, and others. Volume III. and Volume IV. twenty-eighth series, 1918. Publishers: J. B. Lippincott Company, Philadelphia, London, and Montreal.

AT the recent medical conference at Delhi, India, the president, Sir Nilratan Sircar, discussed among various phases of the medical situation of his country the stupendous problem of the influenza epidemic. It made its first appearance in the capital of the Western Presidency, then spread rapidly over all India along the great trunk railways, till practically all parts of the country were affected. A second, and a far more severe outbreak of the disease occurred in the autumn of the year. In a country like India, where many deaths are not reported at all, it is not possible to arrive at exact figures regarding the death estimate. There is, however, ample reason to conclude that this fell disease has collected during the last six months a much heavier toll than cholera, malaria, or even plague, within a similar period of time. One observer made it 6,000,000 in twelve weeks, which works up

to as much as five times the mortality of war. For, whereas, cholera and plague are more prevalent in large cities than in villages, and malaria ordinarily affects the villages more than the towns, this disease affected urban and village population without distinction. As the war required, and rapidly obtained, the willing and devoted service of a large number of medical men, the epidemic taxed to the utmost degree the energies, attention and time of every medical man left in the country, yet thousands of sufferers died without treatment. The number of ministers of health were hopelessly inadequate in comparison with the innumerable sufferers. Less than 10,000 persons were struggling to minister to the medical needs of a population of 830,000,000.

The conference representing Allied Red Cross Societies, under the presidency of Sir Robert Philip, has been considering the report of the sub-committee on tuberculosis. There was striking unanimity in the expression of opinion that what was needed was a common scheme of action throughout the world on the lines which had been already adopted in Great Britain, and, to a large extent, in the United States. The centre and pivot of activity was the tuberculosis dispensary. With this must be closely linked sanitoria hospitals or homes for advanced cases, open air schools, and farm colonies. Particular importance was urged on attention to such vital matters as the care of children, the problems of housing, nutrition and alcoholism; the institution of appropriate measures to prevent the transmission of tuberculosis through infected milk; open air schools for the accommodation of children already infected by or suspected of tuberculosis; close co-operation between the several institutional factors—dispensaries, hospitals and sanatoria—and the more extended development of skilled social service under medical care.

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PRESIDENTIAL ADDRESS

By S. Grondin, M.D.

Professor of Obstetrics and Gynæcology, Laval University, Quebec

IN rising to address the members of the Canadian Medical Association, my first and agreeable duty is to thank you for the great honour you have conferred upon me, in electing me your President; and I wish to express here, publicly, my high appreciation of the kind thought, which led to your choice of my humble personality. I am well aware that your intention in doing so, is to bestow an honour upon the whole French Canadian profession, and this consideration was a strong argument in favour of my accepting a charge that I would qualify as formidable. It is indeed no easy task, that of preparing and presiding over a meeting of eminent men, such as those I see around me to-night. It is with a just feeling of pride that I behold this gathering of renowned practitioners, and it gives me confidence that this day shall be one to be remembered in the history of our Society.

Everything, in fact, contributes to make this year's meeting an eventful one, since we may look upon it as the Jubilee meeting of our Association. It is true that we were founded in 1867, but our annual meetings were interrupted twice during the first two years of the Great War so that this is really the fiftieth one we are holding at present. Moreover, we are at last rid of the terrible anxiety of the four years of incessant fighting we have lived through, and the whole world is turning over a new leaf in the Book of Life. We can rejoice freely in the celebration of our anniversaries, for it

Delivered before the Canadian Medical Association, June 26th, 1919.

is the dawn of the day of universal peace, which will illuminate the beginning of this second period of our Association.

Before going any further, Gentlemen, I wish to extend my hearty thanks to the delegates from Halifax, to whom we are indebted for the holding of the Convention in Quebec this year. For, notwithstanding their precedence over us, they graciously gave up their rights in our favour, and I am glad to have an opportunity of telling them how much I appreciate their act of courtesy toward us.

Gentlemen, if we go back to the birth of our Society, we find that it was in Quebec, the old city of Champlain, that it occurred. In October, 1867, at the Laval University, for the first time physicians from all parts of the Dominion assembled for the discussion of scientific questions and also to improve the medical conditions in the country. They had answered the invitation of the late Dr. Sewell, who was then President of the Quebec Medical Society, and we can read amongst other resolutions in the report, the following:

"Resolved, that the Quebec Medical Society recommends the calling of a Convention of medical delegates from universities, colleges, schools, medical societies in the Dominion of Canada, to meet at the City of Quebec, on the second Wednesday in October, 1867, for the purpose of adopting some concerted action on the subject of medical legislation in conformity with the report and the formation of a Canadian Medical Association."

This report was signed by the late Dr. W. Marsden, Chairman, and the late Dr. R. H. Russell, Secretary, and a copy of it was sent to every new member of the medical profession in the Dominion of Canada, amounting then to three thousand. One hundred and sixty-five responded, of whom one hundred and thirty-three were from the Province of Quebec, and of this number one hundred and one were French Canadians, twenty from Ontario, eight from Nova Scotia and four from New Brunswick.

Dr. Sewell, in his address to the Convention, spoke these words, which deserve to be remembered:

"Gentlemen, I look upon this day, as a most important one in the history of Canada, one replete with interest and full of promise for the future, not only to us, but to society at large. Moreover, I am satisfied that this meeting has a national, as well as a scientific importance, which must commend itself to all reasonable and right thinking men."

These words, gentlemen, could be said at this very time and

would be applicable to any one of our meetings at present, I am proud to say.

It was at that first meeting that the members of the first executive committee were elected, and at the afternoon meeting, the Honourable Dr. Charles Tupper, of Halifax, was chosen first President of the Canadian Medical Association. There were at that time as vice-presidents for each province:—Dr. Hector Pelletier, of Montreal, for the Province of Quebec; Dr. R. S. Black for Nova Scotia; Dr. Le Baron Botsford for New Brunswick; Dr. E. M. Holder, of Toronto, for the Province of Ontario; Dr. Alfred G. Belleau, of Quebec, was elected General Secretary; Dr. Robert H. H. Russell, of Quebec, was elected Treasurer.

Let us note that of all those learned and eminent men, who were the founders of our Association and who were then the leaders of medical thought in Canada, many of whom were our esteemed and beloved professors, not one of those toilers of the first hour remains to be present to-day at our Jubilee meeting. The last one to leave for a better world, was our Professor of Surgery, Dr. Laurent Catillier, who died last year. To all of them, let us give here a kind remembrance.

Gentlemen:—Do not expect from me to-night a dissertation in medicine, as has been up to now the general habit in the Presidential Address. I will act contrary to the established custom, keeping in touch, nevertheless, with subjects of medical interest.

The terrible war we have just been through has had the result of cementing, between England and France, an everlasting friendship; it is no more the mere "Entente Cordiale"; there is between the two nations that once were enemies, a fraternity sealed with the blood of thousands of heroes, and there are some of us here to-night, who know this in their own heart's pain. For have we not, English and French Canadians alike, shed our blood in the Great War, and, therefore, have we not the very same reasons for being united by the same links of friendship!

And as for us physicians, are we not in the best condition possible to realize this dream of brotherhood? We are not, like so many other prominent men, divided by political interests or religious questions, the two great sources of endless contests.

The doctor who takes to heart his noble profession and does not take part in the conflicts of the extremists, is, in my point of view, better placed than any one else, to become in our country, the instigator of what I would call the "*Union Sacrée*" between the

two different elements of our population, who, though separated by the difference of language, are animated with the same spirit.

I trust the fulfilment of this aspiration belongs to the Canadian Medical Association, and its accomplishment would create, I am convinced, a sincere friendship, not only between the members of our profession, but also between all the subjects of the Empire in the Dominion of Canada. Was it not this *very* same thought which dictated to Dr. Tupper these eloquent words that he addressed here in Quebec to the medical profession and that I will ask your permission to recall in remembrance of our first President:

"At a time when political union of the Provinces had been accomplished, it was thought advisable to unite more closely the members of the profession in the Provinces, so that they might become better acquainted with each other, and might consult respecting the best means of elevating the profession and advancing its interests, and thereby be advancing the interests of the people of this great Dominion. I regard it as important, because I hold it to be a meeting of members of a profession the most noble, the most unselfish and the most influential of any secular profession or calling. The most noble, because our lives are devoted to the God-like work of relieving human suffering, and of contributing to that, which is felt to be the most important object, not only the relief of human suffering, but the preservation of human life, whenever it is possible that human means may aid in its preservation. The most unselfish—because it is the only profession, which, I believe, uniformly gives its untiring services without fee or reward, wherever suffering humanity demands attention and consideration at our hands. The most influential—because, knowing, as it does, no distinction of creed, no distinction of nationality, no distinction of class, no distinction of party—the members of our profession form the connecting link between all creeds, all nationalities, all parties and all classes. They have an opportunity of exercising a moral influence, which, I believe, is fully admitted to be certainly second to that of no other profession."

It seems to me that this fine speech delivered fifty-two years ago looks to the same end I am aiming at to-day, and that I cannot fail, in counting upon our noble medical profession to accomplish it, and especially upon the Canadian Medical Association, with a membership of 1,300 members at present.

I want you to understand, gentlemen, that it is not pure sentimentality on my part, if I express this wish. I firmly believe that our scientific interest demands our coming more closely together.

We have, English and French doctors as we are, a somewhat different medical training, thence we should have a strong interest in exchanging our ideas and discussing them.

I want to bring before you here, another question of practical importance, from my point of view. Where shall we direct, in the future, our young physicians and surgeons, just coming out from our universities and desirous of acquiring more experience in their profession?

Before 1914, the schools, which attracted us more expecially, were the English schools of London, Edinburgh, and Dublin, the French schools of Paris and Lyons and the German schools of Berlin and Vienna. We can leave aside without hesitation, for the future, those last two universities. After the numerous acts of cruelty and barbarism committed by the German surgeons on our gallant men, I firmly believe that no one from our country will ever follow their teaching. It is consequently to England and France we must turn.

I have no need to praise before you the English universities; you know them better than I do, but I would like you to permit me just a few words about the French School. It would unfortunately carry me beyond the limits of the time I have decided upon for this address, to give you a full knowledge of the teaching in France, and it would require a more eloquent tongue than mine—but I would feel I have been helping towards the betterment of our spirit, if I succeed in putting into your mind, the idea of getting more closely acquainted with French teaching.

My first design was to study with you and compare the two different schools—the French and the German, in order to prove to you that in substituting the one for the other, for our pupils, we have nothing to lose from a scientific point of view. But I deem this unnecessary, because we all know at present, that the system of appointment of the French professors is superior to that of the German, the latter being the result of favouritism. The French are as much superior to the Germans in the science of medicine as they have proved themselves superior to them in the science of war. Besides this, gentlemen, is there another country in the world able to boast of so many illustrious names as those who have immortalized the School of Paris?

For instance:—*Bichat*, the creator of general and microscopical anatomy. Observation and experimentation were the two great methods by which he made such a great name for himself. No one more than Bichat, practised the experimental method. *Laennec*,

who made the wonderful discovery of auscultation, which is more than sufficient to immortalize his name and of whom I shall not venture to say anything more after the able and learned address given to you this morning by Professor Thayer. *Trouseau*, the most famous professor of clinical medicine of his time. *Claude Bernard*, whose physiological work takes in the whole field of physiology and who has made important discoveries in every branch of physiology. He has made two contributions, which are superior to everything written before on the subject. I mean those which treat of the glycogenic function of the liver and of the vaso-motor nerves. In these subjects we may say that his work was entirely original, and the verification which has been made of this work, especially in Germany, prove it to be faultless. We have no other example of so remarkable a part taken by one individual in any science. It has been said of him that he was not a mere physiologist but physiology itself. And you all know the world-famed *Pasteur*, one of the most renowned men of the nineteenth century in scientific matters. Let us end the enumeration by *Professor Roux*, the collaborator of Pasteur in his memorable researches. Together with Yersin, he established that the bacillus of klebs loëffler is the cause of diphtheria and found the diptheritic toxine. This discovery was the start of the researches of Behring in the diphtheritic antitoxine, which led the way to the scientific treatment of diptheria.

But let us go no further, for the list of eminent men would be too long to give it here. I trust I have said enough to convince you of the importance of seeking the best in the formation of our future generation of scientific men in this country, and of going to France to find this opportunity.

Now if there is any great advantage in sending our pupils to France and to England for their final studies, there is equal necessity of their knowing both languages. France has at present, more than ever, what we find in every page of her history, a kind of mission in this world, and her language is undoubtedly the language of the future.

In order to give to your English pupils a sufficient knowledge of this language, I wish to propose to you to-night, a scheme that I have been preparing, because I trust it will be a great help to our young practitioners.

At my request, Monseigneur Pelletier, our esteemed rector, has agreed, with that love of progress which characterizes him, to ratify the following offer, which I am therefore authorized to express to you:

The Laval University will be glad to receive, free of charge, all young English speaking doctors, of the Dominion, who, having passed their degree in their own universities, would like to come to Quebec, and follow during one year the lectures given at the university and the clinics in the hospitals. They will have a hearty welcome amongst us, and I can assure you that after six months, they will know how to speak French. We would, in return, ask from the English universities the same privilege for our young French doctors.

I know by experience the advantage of living amongst people, who speak a language different from our own, and of following courses given therefore in a strange tongue. In 1885 I was six months in the Rotunda Hospital in Dublin, and it is probably due to my stay there, that I can address you in English to-night. If the wording of my speech has not been always as correct as it might have been, it is because my stay has not been more recent; in any case, it is with all my heart that I have tried to extend to you the warm welcome, not only of the whole profession, but of all the citizens of Quebec, who are proud to see the members of the Canadian Medical Association enjoy the hospitality of their old city, this city of Canada, which more than any other has kept the aspect and the traditions of the first years of the Colony.

Gentlemen, the motto of Quebec is one of remembrance, "*Je me souviens.*" Let us then give you the assurance of the memory we shall keep of this meeting of our Society, and of our looking forward to another one in the future.

The introduction of women to medical research work has received a decided impetus in Great Britain by the provision of a scholarship valued at $1,200 a year, to be administered by the Royal Society of Medicine. The scholarship has been endowed by Miss Maud Margaret Gibson in memory of her father, William Gibson, of Melbourne, and will be awarded to qualified British medical women.

THE CONTRIBUTION OF THE HOSPITAL TO THE SURGERY OF TO-DAY

ADDRESS IN SURGERY

By Jasper Halpenny, M.A., M.D., F.A.C.S.

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WHEN the more than kind invitation came to deliver the annual address in surgery before this Association, the thought came to mind at once that the invitation came primarily not as to an individual but to the Middle West. The Near-west deeply appreciates this courtesy from the meeting held in the oldest city in Canada, the city of Quebec, founded by Champlain, July 3rd, 1608. The individual chosen still more deeply appreciates his having been selected as the representative.

Since 1659, when the Hotel-Dieu, the first hospital in Canada, was opened in Montreal, there has been a very great change in the place taken by hospitals in the life of the community, both from the standpoint of the profession and that of the people. Then an extremely small percentage of the sick people were taken care of in hospitals. Now a very large proportion of the seriously ill are taken care of in such institutions. It is safe to say that the major part of surgery is taken care of in hospitals. Therefore it would seem fitting that we should discuss the topic we have chosen. It will lead us into discussion of the hospital from the standpoint of the patient, from the standpoint of the surgeon, and also from the standpoint of the training of the surgeon of the future, the senior resident surgeon.

In any consideration of the contribution the hospitals of to-day are making to surgery, the chief attention must be given to the patient, since the whole service, hospital, surgery and everything else exists for the patient. The problem of the surgical care of patients is a much more complex thing than the mere technical doing of the operation. In fact, the patient's chief interest is not

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merely in having a necessary operation well done, but it is in getting well to such an extent that he will stay well. With this fact in mind the view to be taken, on many points, will be materially different to what it would be if the chief thought was the betterment of the pecuniary or social well-being of surgeons. It may be said that this is self-evident, and therefore need not be stated at all. Is it not the case that, self-evident though it be, it is often overlooked to the detriment of a patient? If this is kept in mind while the subject is reviewed, some of the things said will not be regarded as too extreme, too drastic and too inconsiderate of the struggling general practitioner, who is giving the best of his life amongst the poor of the city, the hardships of rural Quebec and the Maritime provinces, or in the cold winters on the prairies. The medical profession exists for the betterment of the welfare of the people, physically and mentally. If this fact were kept constantly in mind, it would affect not only medical ethics, but the treatment of the patient, and it is not enough that we endeavour to advance in the scientific side of our work only. We must take our full share of the responsibilities that are involved in filling our place as a unit in the complex social fabric of this modern age.

It should be settled beyond a preadventure that the entrance of a patient on the roll of a reputable hospital should carry with it a guarantee, not in writing but nevertheless in fact, that the case will be thoroughly studied and that any surgical procedures undertaken will be reasonably well done. To insure this will necessitate some sure method by which the Board of Trustees of that hospital will know positively whether the man who proposes to operate is competent to do so. To state it negatively, this responsible body will not let an incompetent man undertake an operation, which to the patient is an all-important thing. This statement will find strenuous opposition from many would-be surgeons. Boards of Trustees will not always be ready to accept the responsibility. Referring to this point, Dr. John Young Brown of St. Louis says: "It is impossible for those in charge of hospitals to evade the responsibility conferred through the trusting confidence of the patients who enter their portals in the full belief that nothing improper or unwarranted will be permitted by the hospital authorities during his or her stay within its walls. Were it not for this almost universal feeling on the part of the patient, it is doubtful if our hospitals could exist. Do the hospitals in return meet this confidence of the patient with a full realization of their responsibilities in every direction? Unfortunately, in most cases, we must reply in the negative

"The hospitals are in position to refuse to become parties to other than competent and skilful work in handling of the unfortunate sick in their charge.

"A position on the Board of Trustees or Directors of a hospital is a great public trust; that trust must be observed and realized to a greater extent, and it is our duty in every rightful manner to assist hospital boards and administrators to a full understanding of their responsibilities to the public. They cannot relieve their conscience with the inference that the treatment of the patient lies with the doctor's conscience and that they are to supply only the facilities for carrying out his work. Many board members would shrink from the knowledge of conditions within their hospitals, were they informed of the true state of affairs."

In the matter of the surgeon's responsibility, let us not forget that, in the intricate fabric of modern social organization, there is immense responsibility placed on the medical profession. We are the only people legally qualified to take care of the sick. If that responsibility is abused by incompetent surgery, the profession has just that far lost its right to the confidence of the people and to the special privileges enjoyed.

And if the surgeon, as a member of this specially privileged class, is morally bound to reach a fair standard of efficiency before undertaking critical operations, does this relieve the Board of Trustees altogether from responsibility? Some think so. Is, then, the hospital merely a nursing home so far as the Board is concerned? Is that Board not responsible to the public to the extent of seeing that there is good nursing care, a properly equipped *x*-ray, a pathological laboratory well equipped and equally well staffed? Then why not accept the same responsibility for the doing of the operation as for seeing that the *x*-ray work and the laboratory work are scientifically done? In some hospitals in Canada this is not a problem at all, because members of the staff only are allowed to treat private patients. In the great majority of cities this is not the case, however, and the issue here raised is a very real one. Has not every man who gets a license the right to undertake major operations? This is the question raised. If the answer is not given to this question in a straightforward way by the profession, and by the boards of our larger hospitals, it will be answered in a very drastic way by the public. Lacking sufficient information, they probably will not answer it nearly correctly.

In their attempt at regulating the matter and rectifying the evil which exists, their efforts, as they will be translated into law,

may prove a detriment to the people as well as to the profession. It must be candidly admitted that many necessary operations are badly done by men who have spent no time on special preparation for surgery, and also that sometimes unnecessary operations are done. Rutherford Morrison said to this Association in 1914: "Surgery has now arrived at a position beyond the reach of the family doctor, and, unless in exceptional conditions, he should not, in the interests of his patient and himself, perform surgical operations."

Let two things be clearly understood at this point. In localities somewhat removed from the larger centres, emergent surgical cases must be taken care of as best they can by the general practitioner, to whom the people owe a very great deal. Some of the noblest medical work done is by the men who live in small places and have long drives, and emergent cases both surgical and obstetrical are very frequently well done. Secondly, it is not claimed that surgeons always perform all operations perfectly after having made an accurate diagnosis. It is claimed, however, that the man who spends much extra time in preparing himself for surgery is more likely to give the patient fair service, than is the man who has acquired no surgical training except what he got in an undergraduate course. Therefore it is respectfully submitted to this, the national association of our profession, that it is highly desirable, in the interests of the people, that major surgical operations in the hospitals in the larger centres be done by men who have spent some time in special training for that work. This suggestion, if understood by the people, would likely meet with their approval.

Hospital Boards must accept the responsibility of deciding on the fitness of individuals wishing to use their operating rooms. Having accepted this most important duty, the board will then be quite prepared, in addition, to see that good board, good nursing and good intern service are rendered.

Next comes a duty not so readily agreed to, viz.: that of seeing that there is an adequate record kept of each and every patient. Some of the men attending patients where the private wards are open, will claim that what disease the patient has and what is done for him is a matter of no concern of any one except the patient and the doctor. One has seen a doctor refuse even to record a diagnosis saying, "It is none of the d—— business of the hospital." The patient may not always choose to employ the same doctor. What about the needs of that same patient in case of a future illness? Just what was done at a former operation may be of the

greatest possible importance. Why should not this all be duly recorded in the files of the hospital? The work now being done by the American College of Surgeons along this line is most important and deserves the loyal support of the medical profession, and the cordial co-operation of hospitals. Hospital treatment of the sick is so important in these days that a record kept in the private office of a physician can no longer be thought to be sufficient. The hospital board must insist on a complete record being on file in their record room. And to carry out this and other policies they will employ a superintendent.

Regarding the place of the superintendent, Dr. Edward Martin has this to say, "If you have a real, wide-awake, up-to-date superintendent, he should conduct things, and not the board of managers. The function of the latter should be to get money and to guide and approve what the superintendent does. A real superintendent will not only help the people, his friends, and his colleagues, but will help the physicians and surgeons on the staff. He will be their executive, he will make the things come true which the doctors want." What more ideal a superintendent could a hospital have than this?

In addition to seeing that the general organization is complete in every department, that the departments all dove-tail into one another, that equipment keeps pace with the growing needs of the hospital, his special contribution to surgery will, for one thing, consist in helping to secure for each patient just what he or she needs. A direct watch should be kept by him on the work in the operating rooms to see that every thing done there is properly done, including the operation itself. His personal opinion would not be final, but would be checked up by the staff. If doubt is expressed about the actual work done by some surgeon, the matter would be adjudicated on by a select committee of the staff. Briefly then, the superintendent should see that each case gets good surgical treatment.

For the proper doing of their work, the surgeons must be provided by the hospital with all that modern science can contribute, and there must be added to this an adequate and competent resident staff. This staff should include thoroughly trained nurses and also sufficient clerical staff to insure the proper keeping of records. For purposes of having the actual steps of the operations recorded, and to save the surgeon's time, the hospital should provide some one to take notes at the operations, or should have a dictaphone in a nearby room for the use of the operator when the case is finished.

In the matter of nursing assistance in the operating room we are probably due for some revision. In many training schools for nurses the idea still holds with pupils, lady superintendent, and Boards of Trustees that the senior "scrub-up" work should be part of the routine and essential training of every nurse. The pupils demand it as a right. The lady superintendent agrees and the Boards so decree.

If the pupils were treated as pupils to the extent of acting as assistant "scrub-up" nurse to a fully qualified nurse, and this for the purpose of instruction only, it would be justifiable. But what really happens is that the economic phase settles it by ruling that only one person must be so employed during an operation, because it is a waste of nurse-power to put two able-bodied women at so small a job.

The pupil nurse at once ceases to be a pupil nurse and becomes the professional for the time being. What defence can be made for the custom still prevalent of having an untrained, undergraduate nurse do the senior nurse's work while a surgeon of years of experience must do the senior surgeon's work? Except in an emergency no hospital has a right to have the patients within its walls, who require operations, subjected to that link in the chain of attendance being so feebly welded as is the case when a timorous pupil forms the link.

Furthermore, probably not more than five per cent. of pupil nurses will be required for this work. Why train one hundred per cent. when ninety-five per cent. will never use the training?

It is respectfully suggested that the custom as it still exists is some hospitals should be abandoned. And in its place it suggested that the essential thing of developing the aseptic habit in the pupil be done by having her work under a fully trained nurse also scrubbed up. Thus any break in technic would be seen and the patient safeguarded by the senior nurse. If nurses are not plentiful enough to do this, then deny the privilege to any except those specially adapted to the work.

With a well organized operating room, good clerical assistance, good records, good *x*-ray, pathological and bacteriological laboratories, good ward nursing, and good board, the functions of a hospital may be thought to be complete from the standpoint of the surgeon.

Hardly so. One agrees with Kanavel who says, "The hospital must become a diagnostic and teaching centre if it is to realize its highest ideals of service to the physician, the patient, and the com-

munity." But all hospitals are not connected with medical schools. How then shall they become teaching centres? Kanavel thinks "the educational functions of a hospital may be grouped in four divisions: 1st, as to the interns; 2nd, as to the staff; 3rd, as to the profession at large; and 4th, as to the community." On the latter point he has this to say: "The public has always had unstinted praise for knowledge, and in proportion as our profession demonstrates a real scientific spirit, the moral and material support of the community may be expected. No propaganda will be needed then to educate the public as to the fallacy of faith cure, osteopathy or chiropractics, for the rise of which we ourselves are primarily responsible, in that they are the heritage of our aloofness from the public and the mystery with which we have clothed our profession. Science needs no mystery, knowledge no mask, and competence no propaganda. The laity must be taught by lecture and demonstrations under proper auspices. The public is more ready to help us and understand our problems than we have been to take it into our confidence. To win this confidence the staffs and the trustees of the hospitals must have the right ideals in medicine. Efficiency on the part of the one and service divorced from material advantage on the part of the other, must be our ideals. Dividends must be sought in scientific knowledge, in the cure of disease, and in the amelioration of human suffering, rather than in dollars and cents. But let no one doubt that the latter will follow inevitably in the train of the former. The trustees are anxious and willing to do their part, but they must be taught the difference between a custodial and remedial hospital, and a scientific hospital. The trustees and superintendent must cease to feel that their duty ends when they have provided food and beds for patients. Carpentry in surgery must end. Laxness or laziness in diagnosis should be branded as a crime."

One of the weaknesses in the practice of surgery is that men tend to become stationary, and call it standardizing their work. A surgical research department in a hospital would save the surgeons from becoming fossilized. The chief value of research work consists not in the number of new facts discovered, but in keeping all workers still students. The student type of mind, always groping for new light as it does, is a *sine qua non* if a surgeon is going to give his patients their due. A research department, in the surgical service of a teaching hospital, would provide scope for the very alert, active young men of the interne staff. Such men are almost always to be found. The display of energy by these young men

would have a most beneficial result on the surgeons all the way up the line.

This surgical research department does not need to be extensive, nor yet expensive. It should provide facilities for doing entirely new work or for repeating work reported from other laboratories. It would provide an opportunity to test out different surgical procedures and to become proficient in them. It would keep alive that spark of scientific ambition which gleamed brightly in student days. It would prove to be the elixir of a man's surgical life.

Such a laboratory would go far to save the staff from the criticism made by Sweet when he was addressing the Philadelphia Academy of Surgery. "We hear to-day a great deal about the full-time idea in schools and hospitals. Now do not be misled that this idea is being discussed because it has been started at the Johns Hopkins and at St. Louis and is being started in Chicago, nor is it being discussed because the Rockefeller Foundation is behind it. It is being discussed because of dissatisfaction with existing conditions, and unless these existing conditions are changed it will come here. The dissatisfaction is with the men who hold so many hospital appointments that they have not the time to give more than gleanings, even though they are capable of better things, with the men who, having ideas, have only time to pass them on to their assistants, who pass them on to the internes, who pass them on to the head nurses, who pass them on to the probationers, who pass them on to the orderlies, who pass them on to the bed-pan, dissatisfaction with the men who use the hospitals for gaining experience and never hand back to the hospital a *quid pro quo* in the form of crystallized experience or knowledge."

As a unit in the care of surgical cases in well organized hospitals, the surgical staff must of necessity take a very large place. The scientific lead, the inspiration, the thoroughness, the fidelity to the patient's interests and rights, must all emanate from the surgeons. They must stand for all that is essential and all that would be desired for their most intimate friends or loved ones. Then the surgery in that hospital will be what the citizens have a right to expect.

When the patient of to-day is taken care of according to his rights, it might seem that the hospital has done the whole of its duty. What about the patient of the future? They will be as well looked after. By whom? By the same staff? The grim reaper will come along some day. Who will fill the empty places?

New surgeons. Where will they come from? When should direct instruction begin in surgery in the life of the surgeon-to-be? As a student or as a graduate? If as a graduate, should it begin as an interne in a hospital or in a postgraduate, or should it begin when the man gets out into practice? If in practice, should it be with a surgeon or out entirely on his own initiative? Discussing this at the Hamilton meeting last year, the writer had this to say:

"*The direct preparation for doing surgery should begin after graduation.* It is a grave error to think that operative surgery should not only be taught during the undergraduate course, but that it can be taught on the cadaver. The very high regard a surgeon should have for living tissue is of supreme importance. This cannot be learned by working on dead tissue.

"After finishing the academic term, no student should be given a license, and possibly not a degree, until he or she had served at least one and better two years' residence in an approved hospital. All students, irrespective of whatever specialty they may intend to follow, should have this general training in a hospital. (For men who have got thus far at a fairly early age, say twenty-three or twenty-four, two or three years spent in general practice would be of great value to the surgeon-to-be.)

"At this stage a man who wishes to be a surgeon should begin to get the special training necessary to equip him, but not before. He should now spend at least two years more, and better, three as resident surgeon in some well organized teaching hospital, or associate himself with some surgeon of wide experience and good judgement for an equal length of time. Many young men would most gladly spend this amount of time in a hospital if a fair stipend were offered. Safe it is to say that for the second year's residence in hospital, the interne would be content with even the pay of the operating room orderly. The young man who is willing to spend all these years in training for highly specialized service for the public, is surely entitled to some financial remuneration during the last years of his training, which years, be it remembered, are full of service to the people.

"As the potential surgeon grows in judgement, caution and knowledge, he should have increased responsibility placed upon him even to the extent of doing much work himself, first under the eye of his chief, and later, alone. The man must be given a load to carry all by himself in order to make him realize what responsibility a surgeon assumes when in practice on his own account."

In defence of this it is respectfully urged on this association,

and through it on the medical schools of Canada, that the mass of material that must be worked over by the medical student, is so great that no man can accomplish all that goes before and with diagnosis, let alone adding on top of that the knowledge, and technical skill necessary to carry out the more difficult surgical procedures.

In considering just how much should be taught, during the undergraduate years, of the actual procedure of operations, the following points are suggested as covering probably most of the essentials. First, living pathology should be taught. There are some points in living pathology that can be better taught at the operating table than any other way.. The pathology back of the hard belly-wall of general peritonitis, due to a ruptured viscus, can be really deeply impressed on the student mind only by his making an examination of the case, and then seeing the inside of the abdomen at operation. The crippling effect of extensive adhesions in the case of a traumatized extremity can be much better taught as an object lesson than by any other method. The same may be said of intra-abdominal adhesion. Second, pathology as a laboratory subject can probably be better taught by a combination of the careful study of the case leading up to a diagnosis, and finally the study of the gross specimen, and of the microscopic section, than the witnessing of the operation. Third, by witnessing some of the simple operations, by studying the detailed steps of the same, and by following the cases afterward, the student will learn something of the possibilities of surgery. He will also learn something of its limitations, a point of no small importance. Fourth, he will learn something of what is meant by surgical asepsis. This will be of inestimable value to him in his practice of obstetrics, a line which most men, in their early professional days, know something of. If perchance the student later makes chest work one of his specialties, the surgical conception of asepsis will stand him in good stead when he wishes to put a hypodermic needle into a chest to see if it contains fluid. Fifth, the preceding requirements will be met while the student is acquiring enough surgical training to fill his needs, if he chooses the work of a general practicioner, when certain emergent cases would have to be operated on by him.

If surgeons are not trained during undergraduate years, what other alternatives suggested above are open? Can a man learn to be a surgeon out of his own general practice? This has been done in the past and could be duplicated again. Is it desirable? These same men would have made better surgeons had they spent time

definitely assigned to learning surgery. Without giving offence to anyone, it may be safely said that the surgeons of the future should not be trained that way.

It can scarcely be longer justified that a man should undertake major surgery, other than the emergent work somewhat removed from a surgical centre, on the patients that come into his hands in the course of a general practice, unless he has first spent some time specially fitting himself for this work.

The early method of gaining a medical education, by a system of apprenticeship to some already established practitioner, may be adopted in the learning of surgery. This method, at the present time, would be virtually reduced to hospital work, because the vast majority of major surgical cases are taken care of in hospitals. In so far as it would not consist of hospital work, the young man, by this scheme, would lose much of the modern methods of making a diagnosis. He would lose much also in the way of after-treatment. The hospital interne is the man who really gets after-treatment in its entirety.

Shall men, after a period spent in general practice, take a postgraduate course and return as surgeons? If that postgraduate course includes a term of interneship of sufficient length and breadth, it will fulfil the requirements. This merely reduces it to an interneship. An academic postgraduate course, adorned by a course of operative surgery on the cadaver, can scarcely be said to be the road to surgery. It would seem then, that the first alternative suggested above, viz.: as an interne, is the road by which men will, in the future, arrive at the goal of their ambition to be surgeons.

If one may be permitted to repeat, for emphasis sake:—the interne should spend one year at least on general work and then enter the surgical wards for at least two years. During these years of residence in a hospital, much depends on the hospital as to how well the man will be trained. Outside of the duty the hospital owes to the patient, its duty to its interne is one of the chiefest. Safe it is to say many a hospital recognizes no such duty. The view of many a board is that a system of interneship is a cheap way of getting labour. This educational duty of a hospital is yet to be taught to Boards of Trustees. For the surgery of the future it is an essential.

Here then, we come to the chief point the writer wishes to make. The surgery of the future must look to the internes of our hospitals for recruits. Therefore the provision of ways and means of training surgeons should be one of the chief functions of teaching hospitals.

To quote further from Kanavel with regard to the educational functions of a hospital:

"What should a hospital teach its internes? First, medical knowledge; second, ideals; third, thoroughness; fourth, imagination. It is the duty of the staff and hospitals' authorities to cultivate all of these.

"The hospital must become a diagnostic and teaching centre if it is to realize its highest ideals of service to the physician, the patient, and the community."

With this one agrees entirely. Applying this statement to the problem of the training of surgeons it is very doubtful if any hospital in Canada has yet come within measurable distance of the goal here set. As a matter of fact, even with the staffs of hospitals, it is very doubtful if any serious effort at the education of their house-surgeons is systematically made.

The actual surgical training should include history taking and the examination of the patient. There should always be held before the interne the ideal of getting as much as possible leading to a diagnosis before the laboratory is called into use. Then the various laboratory and *x*-ray findings should be used to correct the clinical findings. One cannot but think that laboratory diagnosis sometimes overshadows the clinical efforts. The laboratory should always supplement, but not precede the thorough clinical review of the case.

The completed record of the case should include all the essentials of the progress of the case until it leaves the hospital, be it by the route of the limousine or the morgue. And no case should leave the latter abode till the whole story is revealed by a post mortem. On this point we speak feelingly, because of the very great difficulty, in western cities specially, of securing post mortems.

Assisting at operations is the one thing in the hospitals that looks good to the interne. There may be difficulty in getting him to write histories, follow the after-treatment and do laboratory work, but there is no difficulty in getting him to assist at operations. There is, however, a very great diversity in the amount of actual education for the interne in various clinics. The second point referred to by Kanavel here applies, viz.: the teaching of ideals. The actual conversation over the open wound will determine largely the amount of training the junior gets and will to some extent set the standard of his ideals.

Just how much does the hospital do on these two points for

the interne? Is the hospital all it should be? Sweet asks this question and goes on to answer it.

"Is there any wrong which needs righting? I feel that there is, because for many years now I have watched young men go out from the medical schools with ideals which are certainly broader because of the improvements in the laboratory courses now in force in our medical schools. They go into our hospitals, and the next time I see them their ideals have been changed to the more narrow ideals of pure practice. The laboratory means little to them, the laboratory training in the art of acquiring knowledge has vanished, the use of books as tools seems to have been forgotten.

. . . . . .

"Somewhere between the time of leaving the medical schools and completing the years as hospitals' internes, someone has undermined the efforts of the teachers of the medical schools to give to the students a broader point of view. Does the fault lie with the men who teach them in the hospitals, with you as practical men of surgery, or does it lie with the conditions existing in our hospitals? If it is with the conditions as they exist, who shall remedy these conditions?"

The answer to this must be made by the staff. In the future, members of the staff, who do not help make it really worth while for young men to spend several years in a hospital, will have to give place to unselfish men with a vision, men whose glory in life is to help train up the surgeons of the future.

In addition to making diagnosis, record-taking and assisting at operations, the interne will learn after-treatment. There is no way he can learn it other than as an interne. The thoughtful resident houseman gets such a fund of first-hand knowledge on this subject that he really cannot but make it part of his permanent equipment of mind for his future practice.

Acquaintance with the methods and possibilities and limitations of the pathological laboratory will be one of the valuable assets of the resident surgeon. Sweet says:

"You cannot hire somebody to think for you any more than you can hire someone to perform many other of your personal physiologic functions. He who embarks on the surgical cruise, ships for no joy-ride. If we wish to raise the standard of surgery, if we would weed out undesirables, let us get this idea clear before the minds of the aspirants to surgical success, that the real surgeon must know as much as any man in any branch of medicine and

then some, this 'then some' being the whole field of surgical technic."

In preparing for the "then some", what might be called a surgical laboratory should be opened in all large teaching hospitals where actual operations should be done by the resident staff under direction. There also should be scope for surgical research work. The type of mind developed by the effort to do some research work is of inestimable value to the man in the future. The value lies less in what is discovered than it does in the effect on the mind of the student. A man so trained will be much better fitted to profit by the recorded experience of other men. He will be better equipped to select from the literature, methods characterized by saneness. All surgical literature cannot be so regarded.

The men who are chosen to fill the senior resident surgical positions must be selected with care. Once a man is placed in this responsible place, in addition to making it possible for him to complete his education as a surgeon, the hospital and the community owes it to that man that he should receive an adequate monetary return. In the manufacturing world of to-day, the apprentice receives a wage of probably twenty per cent. of that of the expert. The young man who will spend two years in pre-medical training after leaving high school, five years in the undergraduate course, and three or four years' residence in a hospital, should not have to work all those last years without remuneration. This is one of the duties the hospital of the future must accept and cheerfully fulfil. The real hospital is living as much for future patients by training surgeons, medical men and nurses, as it does for the care of the sick within its walls to-day.

The honorary Advisory Council for Scientific and Industrial Research has converted one of the fellowships established by it into a Ramsay Memorial Fellowship, to commemorate the services rendered to science by the late Sir William Ramsay. This fellowship will be a one year appointment, and the holder will be required to carry on research work in two chemical laboratories in Great Britain which has been approved of by the research council. Its value is $1,500 and the award goes to the best of the candidates in chemistry, who have already successfully completed their research of some chemical problem of importance.

REPORT ON CINEMATIC AMPUTATIONS

BASED ON A VISIT TO PUTTI'S MILITARY CLINIC IN BOLOGNA, ITALY

BY

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AND

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THE work on amputations which is being done at the Rizzoli Institute in Bologna, by Professor Putti and his assistants, Professors Dalatala and San Giorgi, is by far the finest that it has been our opportunity to see. The problem of preparing the wounded soldier, and particularly the soldier who has lost a limb, for return to a useful civilian life, is being studied here in a most careful and comprehensive manner, and we have been conv nced that the new ideas which have been evolved will have a permanent and far-reaching influence in establishing recognized forms of treatment.

In searching for an explanation of the success which has attended their efforts, we must first admit the natural genius and industry of the surgeons. In addition we were struck by the excellence of the surgical equipment with which they are surrounded and by the quality of the machine shops and of the mechanics, to whom many of the problems in prosthesis are relegated. Further we observed that in this Institution the number of patients was not greater than could be handled comfortably by the staff employed, and that there appeared to be no urgent necessity for the rapid evacuation of patients, which always interferes with the successful study of chronic conditions. This latter observation will be referred to later in an appended list of suggestions and recommendations, which may be useful in dealing with this problem in Canada.

The central idea of Putti's work on amputation has been the restoration of the greatest possible amount of the destroyed functions, and the masking of the deformity so effectively that the patient will no longer be an object of pity, or a victim of his own sensitiveness to appearing in public. These ideas have been put

into practice by supplying the patients with artificial limbs which most closely resemble in appearance the normal members, and which are activated by the contraction of those muscles which formerly produced the movements of the amputated limbs. When it is impossible to use such muscles, owing to the position of the amputation, other groups of muscles are employed to supply the necessary motive power, and the patient is subjected to the necessary training to enable him to develop skill in the movements. It may here be pointed out that these ideas have been applied most successfully to amputations of the forearm. In the case of amputations of the thigh and leg, the ordinary artificial limb has proved so successful that it is doubtful whether an attempt to use the muscles remaining would materially improve the patient's condition. Certainly the amount of improvement that could be hoped for is hardly sufficient to justify the operation that would be necessary, and the amount of thought that would be required to devise a suitable artificial limb. In the case of amputations through the arm, an attempt to use the muscles of the stump to mobilize the hand and fingers of an artificial limb, is not likely to prove very successful, owing to the interposition of the elbow, and to the great divergence of the new functions of these muscles from those that normally control the movements of the hand and fingers. While Professor Putti has experimented with both these types of cases, it is quite evident from his lack of enthusiasm on the subject that he does not believe that cinematicization has any great field among them. In the case of amputations of the forearm, however, there is every possibility of employing the principle successfully, as here the muscles which formerly moved the hand and fingers are still present, and if these muscles can be successfully connected with movable parts of the artificial hand, movement and power will be restored which will be under the same neuro-muscular control as under normal conditions.

That the principle is correct both in theory and practice has been most conclusively demonstrated to us. We had an opportunity to see between fifteen and twenty cases in all stages up to three months after operation, upon which cinematicization had been performed. The technique of the operation is exceedingly simple and is exactly as described by Putti and Dalatala in their publications on the subject. Any surgeon of ordinary ability can readily master it. The wound is healed firmly in from ten days to two weeks, although a small superficial granulating ulcer sometimes persists for a week or two at one end of the tube of skin which

passes through the loop of tendon. As soon as healing is complete the patient begins to practise contracting the muscles against resistance, and within two or three days has developed a power which is remarkable. This power rapidly increases with practice, and within six weeks has reached its maximum. We saw several cases which had a direct traction power on the stirrup which was passed through the tendon loop, of approximately thirty pounds. In exerting such a pull against the resistance of our grip on the stirrup the patient suffered no discomfort whatever.

About four weeks after operation the patient is supplied with a temporary artificial hand with which he practices the movements. In this way he develops both power and skill. In the meantime his permanent hand is being made. This consists, as do all artificial hands, of a socket and a wooden hand. The socket, however, is exceedingly light, and the cumbersome leather corset which usually encircles the arm above the elbow is dispensed with and replaced by a perfectly fitting vulcanite covered metal ring, placed just above the condyles. The wooden hand is similar to those used in various mechanical arms, except that it is very simple. The thumb is stationary, and the fingers are jointed and movable.

These fingers are connected by means of a strong cord with the rod which rests in the tunnel through the tendon and so respond to contractions of the muscles. A light spring causes the fingers to open moderately when the contraction ceases.

The most popular operation appears to be the one in which the flexors only are used. But we saw one case in which cinematicization had been performed also on the extensors, and it appeared satisfactory. We rather suspected, however, that the harnessing of both flexors and extensors is not always successful. If such an operation ultimately proves feasible, however, its advantage is at once evident, as the movement of the fingers would thus be altogether under normal muscular control.

Among the cases which were in the wards at the time of our visit were some truly remarkable results. One case in particular attracted our notice. It was that of a young soldier who had had amputations of both forearms, one just above the wrist, and the other just below the elbow. Cinematicization had been performed on the stump about eight weeks previous to our visit, and he had been wearing his artificial hand about two weeks. This hand was of much greater use to him than any mechanical hand we have ever seen. He had excellent control of the movement of the fingers, had quite remarkable gripping power, and had a dex-

terity in the use of his new apparatus which could never be acquired with such arms as the Carnes, the Dorance, or any of the others. To demonstrate what he could do, he took out a cigarette case and a box of matches from his pocket, put a cigarette in his mouth, and holding the match box under the other elbow, opened the box with the artificial hand, ignited the match, and lit the cigarette. This may possibly be considered a useless accomplishment, but it serves to indicate the great value of the treatment in assisting such patients to look after themselves. It may be argued that similar things can be done by patients wearing the various mechanical arms. We have to admit having seen one of the demonstrations of the Carnes Company, who had had similar amputations to those of the patient described, do remarkable things with his wooden hands. But it is only after long and faithful practice that such skill can be acquired, and it is practically unknown outside of the demonstrators of the company. We have known but two soldiers out of a hundred supplied with mechanical hands who ever made use of them, or who considered them as more than a medium of disguising their deformity.

Another important feature of the cinematic treatment employed at Bologna, is the utilization of any rotator power that may be present in the forearm to mobilize the artificial hand. Thus, if the amputation is below the insertion of the pronator teres, the patient has strong power of rotation unless the extremities of the bones are fused, or caught in a dense scar. Should such a misfortune have occurred, the first step in the cinematic operation consists of freeing the ends of the bones so that rotary movements will be possible. This rotator power is then utilized to produce rotation of the artificial hand, an addition which is of considerable value, and which is not at present in any of the mechanical hands that we have seen. The movements are transmitted to the hand by means of a cup which compresses the end of the stump antero-posteriorly, and is connected to the hand by means of a metal rod.

Besides advancing the principle of harnessing the muscles which normally produce the movements required, Putti also advocates using as motors any irregularities of the stump which retain movement and power. The best example of this is seen in the patient who has had an amputation of the hand above or below the second row of carpal bones. Here he has more or less powerful movement of a very short terminal stump This movement is turned to good account by fitting the patient with an

artificial hand in which flexor movement of the wrist stump results in pressure against a metal disc, which in turn communicates flexor movement to the fingers. Thus cinematicization is accomplished without any form of operation. Similarly in patients who have a long stump which retains rotator power, and who decline to have the cinematic operation performed, a moderate amount of controllable movement can be communicated to the fingers of an artificial hand by fitting the end of the stump with a cup which rotates with it and is connected with the fingers by means of a metal rod and a gear.

The success of thus making use of movable stumps or irregularities has led Putti to provide such motors by operative means. We saw one case in which the end of a forearm stump had been converted into two short finger-like processes which acted somewhat like a lobster's claw. By a special mechanical device these processes were utilized to move the fingers of the artificial hand. In other cases the motors are fashioned in the form of pedunculated knobs, around the neck of which are fastened vulcanite covered metal collars which communicate the movement to the fingers. But whilst this method of cinematicization is satisfactory in some cases, we gathered that the operation is difficult, and the result not always certain. Further the application of the power is not so direct as in the method of tubulization. We are therefore of the opinion that the plan is unlikely to become popular.

After the operative movement has been completed and the patient is sufficiently advanced to be fitted with his supply of permanent apparatus, he is provided with an artificial hand and with whatever working apparatus seems suitable to his particular occupation. It is in regard to this latter feature of the treatment that we have our chief criticism to offer. Putti is still trying to make this method of treatment so complete that men who have been artisans may still return to their former occupation. Thus, we saw various types of metal claws, hooks, and clamps, the movements of which were more or less under the control of the patient. None of these appealed to us as likely to be sufficiently successful to make the patient's work satisfactory to himself, or to allow him to compete on anything like even terms in the ordinary labour market. While we saw photographs of men working at lathes and at benches, we were not at all impressed with the apparent success of the effort to return them to their former trades, for we have seen similar photographs issued by the various commissions in charge of National Reconstruction, and by the makers of artificial limbs, and our personal experience has been sufficient to

know that such reports are most misleading. In conversation with Putti also, we gathered that he has been disappointed in his efforts in this direction, and that up to the present he feels that cinematicization has not solved the problem of completely replacing the function of the amputated limb.

But granting the failure of the method to satisfy the high hopes of its chief advocate, the success of the effort has been so great that it is deserving of the highest praise, and of its immediate wide-spreading emulation. It offers to every man, even the ordinary labourer, the possibility of so improving his condition that he is to a great extent relieved of the constant irritation which the loss of an arm causes in ordinary everyday life. Whilst it is not likely to increase the ease with which a farmer, or others who engage in heavy manual labour, can do their daily work, it at least does not lessen their ability to do this work, as the heavy hooks and clamps which are necessary in such occupations can be worked during working hours just as if no cinematic operation had been performed. And even among this class of men, the advantage of being able to write, to act naturally at table, to handle small objects, and generally to conduct themselves while off work in a manner which closely resembles the normal, must be admitted to be very great. To the great majority of those who have lost an arm, however, and who will, in the future, be found in shops, in offices, in professions, and elsewhere where manual dexterity is not the greatest essential to their earning a living, cinematicization will prove a boon which it is impossible to overestimate. And finally for those who have been so unfortunate as to lose both arms, there is no question that the cinematic treatment will immediately change their lives from absolute dependence to comparative freedom and happiness.

We, therefore, wish to recommend that for all Canadian soldiers who have lost an arm, the possibilities of cinematicization be carefully considered. In order that the greatest success may be attained, it will be necessary to place at the disposal of the surgeons the services of an expert mechanic, for, as pointed out already, the surgical operation is only a preliminary to successful treatment. We believe that the artificial limb factory in Canada is already sufficiently well equipped to undertake this work. It only remains to develop a first-class mechanic, who, after he has mastered the principle of the treatment, and the small amount of anatomy that is necessary, can take charge of the somewhat difficult problem of transferring the power which the operation has made available, to the fingers of the artificial hand. When once it

has been demonstrated on a few cases, that cinematicization is the boon that we believe it to be, we would also recommend that all our soldiers who have had amputations of the forearm, and who have not been supplied with a satisfactory limb, should be brought back to the military hospital, with a view to operation and fitting with the cinematic arm.

Upon the wider question of the preparation of our soldiers who have suffered amputations of a forearm or arm, for return to civilian life, we have made some observations and confirmed some opinions, which will be included in this report. We have had an opportunity to see the work that is being done in this direction in Canada, England, France, and Italy. While each of these countries is tackling the problem with much thoughtful energy, and great progress has been made in handling this difficult question, we feel that much remains to be done before anyone of these countries can consider that all has been accomplished that the sacrifice of the men deserves.

The principle is accepted generally that the object of treatment should be to make the patient as completely independent and self-supporting as the nature of his wounds will permit. This principle involves the correct treatment of the stumps, the fitting with artificial limbs, and the re-education of the patients to occupations which do not require manual dexterity. With regard to the vocational training of these patients we have no criticism to make. Everywhere the question appears to be receiving ample attention but as to the success of the effort we are not in a position to give an opinion. Of the surgical treatment of the stumps, also, we shall say nothing, as this is a question not relevant to this report. But of the fitting with artificial arms much may be said to show that the present system is a failure. The trouble has arisen from the hugeness of the numbers of armless men who have been suddenly thrust upon us. This has resulted in the overcrowding of our military hospitals, and the overwhelming of the artificial limb factories, so that the emergency could only be met by fitting the men with hastily designed arms and by getting them out into civilian life as rapidly as possible. Now that the rush is over, however, this question is deserving of more careful consideration and an honest effort to reduce the disability produced by such amputations.

In the first place it appears to us that the idea of supplying armless soldiers with any type of a standard arm is doomed to failure. Very few amputations are alike, and certainly it is very rare to find two men engaged in a similar occupation who have

identical amputations. Therefore, to try to make a standard arm for all cases with amputation above the elbow or below the elbow appears on the surface to be folly. And yet this is exactly what each country, our own included, is doing. The result has been, and this is corroborated by our personal experience, that the men accept the arm, and either wear it as a simple sleeve filler or discard it altogether. It is extremely rare for a man to make any practical use of it. This observation means that we must either give up the idea of ever doing anything to help these men in their work, or settle down to study the problem of each individual case, or group of cases, and design apparatus to suit the type of amputation and the work that the man has to do. The complexity of the problem could be reduced by receiving the patients in groups according to occupation. Thus a great many of the men have been farmers, and propose to continue on the farm if they find they can handle the work. These men could be brought into the hospital in as large groups as can be accommodated, and the whole subject of supplying apparatus for farmers studied. It would be necessary to find out exactly what such a man does from morning to night in the ordinary round of work. Thus, he drives horses, handles ploughs and other machines, and is constantly using forks and rakes and so on. If we had a clear outline of this man's daily round of work, it would be possible, instead of trying to fit him out with some form of universal hook which is supposed to do all things, but which really does nothing well, to equip his ploughs and machines, his fork and his harness, with permanent attachments, which he could quickly hook on to an ordinary stump socket, by a simple lock which might or might not be under the control of cinematicized muscles. Similarly the office and shop clerks, the teachers, the labourers, and so on, could be brought in in groups, and the daily life of each studied. In this way appropriate equipment could be supplied which would make our efforts at prosthesis of some real value. While this sounds like a large amount of work, it in reality could be readily accomplished, as there are not many groups into which armless men can be divided, and there cannot be more than seven or eight hundred cases all told in Canada.

We therefore wish to recommend that steps be take for a complete reconsideration of the question of the treatment of men with amputations of the arm. A great many could be immediately benefitted by the cinematic treatment of Putti and all could be improved by a careful study of the special wants of the various groups of cases.

NOTES FROM THE SERVICE FOR WOUNDS OF THE CHEST

By N. B. Gwyn, *Lieutenant-Colonel, C.A.M.C.*

THE Chest Service, which was organized in 1916, was put upon a firmer basis in the ensuing year by the acquisition of the Red Cross Chest Ward, and we were able to segregate effectively almost all the wounds of the thorax. Four hundred and fifty cases passed through our hands in the nine months of activity, March to December, 1917, and of these, four hundred showed definite evidence of wounding of the chest contents. There were fifty deaths.

The newer surgery of the chest at the casualty clearing stations has modified our work, and our task at present is largely to watch for accidents in the operated cases, and to look for the development of late infections.

In this short paper only a few points can be dwelt upon, such as the routine, clinical features of special interest, and the possibilities of surgical treatment.

The routine of our service is simple, and in our eyes at least, seems to be serviceable; all wounds of the chest are admitted to one main ward; every morning, one or more of the senior medical staff go over the cases with the surgeon in charge of the ward as the dressings are removed. Uncomplicated cases, and those requiring no dressings, are transferred at once, if afebrile, to the medical chest ward for further observation, and aspiration, if necessary. Several sets of exploratory needles are always at hand, and punctures are made early, and often, if the indication is present, the laboratory reporting positive smear preparations at once. Operation as soon as convenient is the rule, but streptococcal cases of infection showing urgency go to the operating room at once. Resection and drainage have been consistently followed out save in the cases to be quoted later.

In the medical chest ward, exudates producing dulness over more than one third of the back, and those showing no evidence of disappearance of the exudate, are aspirated, and if free from fever

Read at the meeting of the Etaples Medical Society, February, 1918.

or persistently sterile to exploratory punctures, oxygen replacement of large exudates is regularly employed. A careful watch for late infection is kept, and no case showing fever is allowed to leave the hospital.

In medical wards we have instituted a rotation of medical officers. Special records are kept of each patient according to the scheme of Major MacDermot.

The numerous autopsies have been recorded and supervised by Major Ower. It is regretted that the morgue of the district offers no facilities for bacteriological examinations, and that material and space for the preservation of specimens is not at hand.

While on the question of routine, the importance of grouping these cases might be emphasized; an unduly high percentage of our fatal cases is composed of chest wounds sent by accident to wards other than the one reserved for them. Even if not overlooked, the following and recording of them out of their proper place is an added and unnecessary detail in a busy service, while it is a commonplace to say that those who are most familiar with certain conditions can best be trusted to observe them early.

The new features met with in handling the cases of chest wounds, and the many interesting details thereof, have been more than exhaustively dealt with by many competent observers, several of whom are present to-day. A few points interesting to both the medical and surgical sides might be touched upon.

One of these is the relatively mild or chronic course pursued by some of the infections due to the gas-producing bacilli.

Urgent as the gas bacillus infections seem to be in the solid unyielding tissues, it is a well known observation that in the chest cavity they may at times run a course almost deserving of the designation, chronic; we see none such in our series of to-day, but amongst the records of the earlier days, I have picked out these case-sheets labelled "gas infections of the chest". They present four first-rate examples, or properly speaking, warnings from the past, from the days when segregation of cases was not practised, and surgical chests were only visited by clinicians "on demand", so to speak.

They are concrete arguments in favour of the proper grouping and inspection of cases which may present the varied clinical pictures seen in chest wounds.

These examples of infection by gas-producing bacilli of low virulence are probably not very rare, and no doubt many of us have become accustomed to consider gas bacillus empyema as a

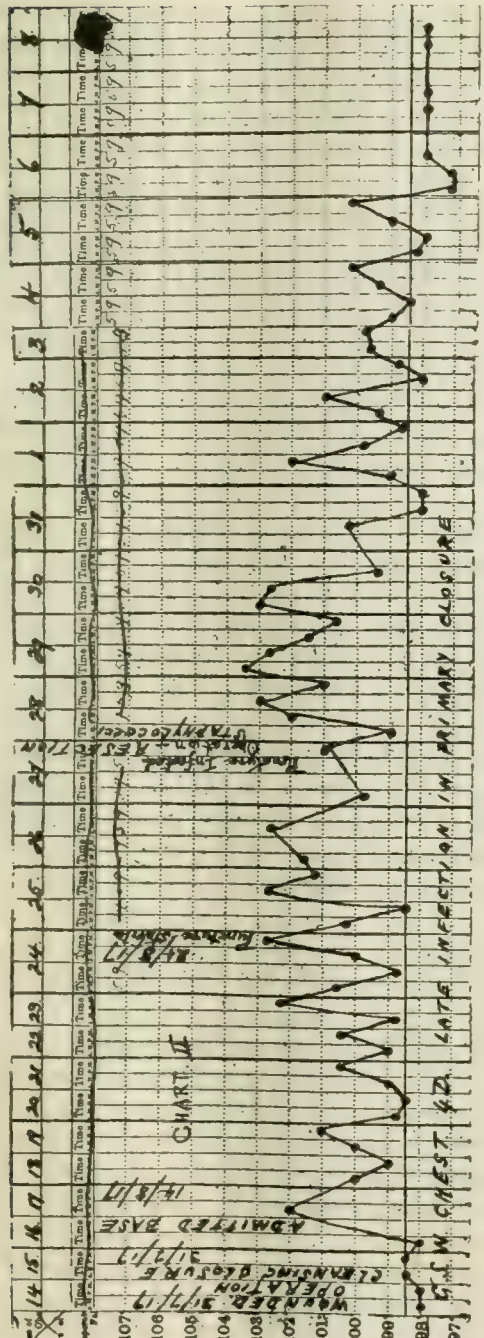
non-urgent condition, purely as a result of having had a few such cases.

We rarely see and should rarely see the type at present. Careful observation and grouping, plus the proper appreciation of the exploratory needle, have practically removed it from the hospitals of to-day. The apparent chronicity and lack of urgency in these four cases in particular is evidenced, not only by their charts and clinical history, but by the fact that they were under the observation at the time of capable physicians and surgeons.

Civil life acquaintance with pyo-pneumo-thorax due to gas bacillus infection has been very limited. The one instance thereof in my own experience when registrar in a large city hospital, was well calculated to impress one with the idea of chronicity, being a case of jaundice and large liver of several weeks' duration. In spite of the demonstration of the bacillus ærogenes in the unsuspected chest exudate, operation was not performed, largely, I fancy, on account of the patient's age, seventy years, and generally poor condition. I was given the privilege of aspirating and following the case to its termination three weeks later, with an angry thrombosis of the left sub-clavian vein. The autopsy allowed us to prove the existence of an inflammable gas in the pleura, the persistence of the infected exudate, but no sign of tissue destruction by the easily cultivated organisms. A scar in the collapsed lung seemed to point to the origin of the infection in the pleura, the thrombus in the vein gave no growth ærobically or anærobically.

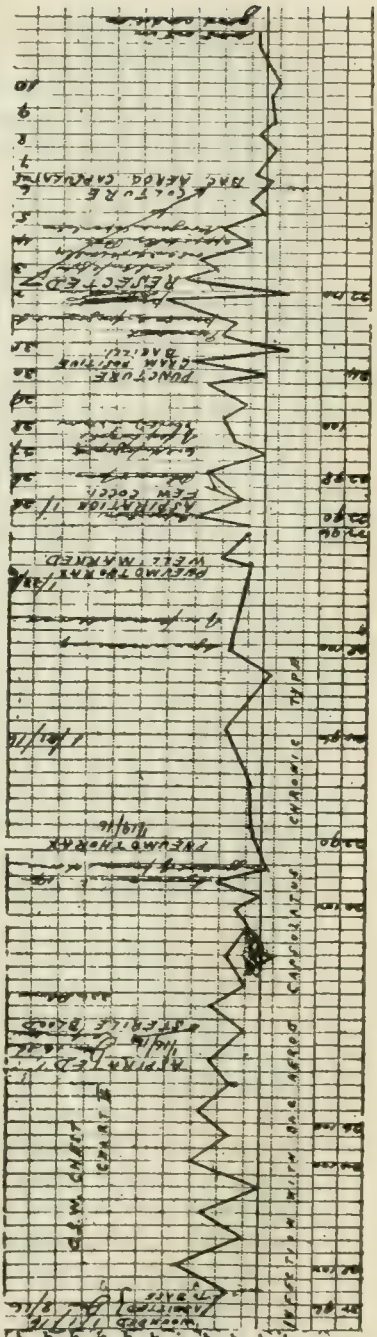
This unusual history not only demonstrates a more or less chronic type of chest infection, but shows the possibility of an infection from within by an organism, which is regarded by most of us, I fancy, as coming almost invariably from without. Equally drawn out have been some of the rare examples of general septicæmia due to the bacillus ærogenes capsulatus. A short detail of history is here in order. Given a place in most text-books, and mentioned I see, by Elliot and Henry in their excellent and accurate description of gas bacillus infection of the chest, is the bacillus of Achalme, described by this writer several years ago, and claimed by him to be the cause of acute articular rheumatism, since he had found it in blood cultures, and in the heart at autopsy; Welsh says this organism is identical with his own: the absence of gas formation in the body was the disquieting point, but in cultures, the bacillus grew out in the typical way.

The cases of acute rheumatism in the Johns Hopkins clinic were at one time carefully studied bacteriologically, seeking this



DAYS AFTER WOUNDING, MAY BE CONSIDERED AS A GOOD EXAMPLE

CHART 4D



"Achalme's bacillus", and from one patient diagnosed "acute maniacal chorea with high fever," the bacillus ærogenes was repeatedly cultivated from the blood, during a period of three weeks. Death took place in the fourth week from an added streptococcus septicæmia. There was no gas formation during life nor after death.

Benign as may have been the infections in the charts under consideration and in the two cases above detailed, immediate operation is the only safe principle to be followed in dealing with gas bacillus infections of the chest. Eleven of twenty-three such infections died; seven of them, however, were badly complicated with other conditions, or were dangerously ill on their arrival.

Occasionally an infected pleura may cleanse itself of its gas-forming organisms. Positive smears with persistently negative cultures in a patient progressing favourably have come to our notice on more than one occasion.

Late appearing signs of infection are not peculiar to the gas producing spore-forming organisms. In our series of cases we have had many examples of infections due to other organisms and all pointing strongly in one direction, namely, that no chest wound with an exudate, or chest wound of the class which permits resection and sewing-up should be considered free from danger of infection for from two to three weeks after the wounding or operation. The chart (*4d*) shows in a striking way how easily a brilliant operation may be nullified by indifferent after-care. In this case a foreign body had travelled from the left buttock through the diaphragm, allowing a hernia of the meso-colon: suture of the diaphragm and pleura had been carefully done; the wound of the chest wall was clean.

Another chart (*3d*), pointed in the same direction. A chest cleaned out and sewn up, patient fever-free for three weeks, subsequently developed infection.

The origin of those late infections by organisms other than spore-forming gas producers, is not always evident. The two cases portrayed came to us as clean, well-healed wounds, with apparently well-evacuated chests. In neither case does the casualty clearing station report the type of infection, if any, at operation. The persistence of a primary infection in some remote corner or small clot is the probable explanation. A fourth chart (*2d*) in our series, a late pneumococcus infection of an exudate, suggests possibilities of re-infection from the lung.

The numerous cases of infected exudate, one hundred and

seventeen in number, were subjected to the line of treatment to be detailed by Captain Bunn,—resection, drainage, washing of the pleural cavity—if the patient could stand it without distress, and application of the Carrel-Dakin methods. Amongst this number are included thirteen cases requiring re-opening after the casualty clearing station operation of cleaning and suturing. Seven out of twenty of such cases required no further treatment. Three of the thirteen requiring immediate re-opening, died. Severe wounds with penetration of the abdomen complicated their course.

Envious of the results in chest surgery reported by other hospitals, particularly in their results in the treatment of late infected hæmothorax, I have been frequently tempted to treat such chests by resection, washing out, closure, and subsequent treatment with repeated aspirations. The two occasions on which I yielded to the temptation were associated with results disastrous to the patient. In the first case a penetrating wound was followed by a hæmothorax, which later became infected by the bacillus ærogenes. The man never seemed ill, had at no time a temperature over 99°, and had a slow pulse. The exudate was thin, bloody, and not offensive, and seemed well localized to the lower back. Following the operation of resection, introduction of the hand into the chest, careful cleansing and closing, air was coughed into the tissues, the pleural stitches not holding. The accumulated pleural fluid remained sterile for twenty-four hours. A spreading cellulitis began about the wound. In forty-eight hours the pleural fluid showed streptococci, but no gas bacilli. The patient was now febrile and ill; the chest was reopened, but the conditions became steadily aggravated, and death occurred after ninety-six hours. A well walled-off cavity was found at autopsy.

In the second instance a through and through wound of the lower chest produced an exudate, which after several days became infected with streptococci. The cavity seemed well limited, and the fluid withdrawn seemed clear, though bloody. A careful operation was done, the patient being in seemingly good condition, there was a period of apyrexia lasting thirty-six hours. Puncture after twenty-four hours gave streptococci which would not grow out; puncture after forty-eight hours, removing as on the day previous one pint of bloody fluid showed the same dead cocci. The chest was washed out with saline. By seventy-two hours patient was showing fever and cough. Aspiration now gave actively growing streptococci: there was no relief. The chest was reopened, but death took place in three days. A diffuse broncho-pneumonia had

developed in the upper lobe of the lung, and in the functioning anterior portion of the lower. The cavity was well walled off.

Even if these cases represent unavoidable secondary accidents it is evident that the procedure is not without danger, and is one requiring that attention to detail which only a careful operator can give. We are open to receive all information upon the subject, but insist that unless the operation be carefully detailed and circumscribed, and be put in the hands of a proper person, it is bound to be associated with many unpleasant results.

Sir John Tweedy, past president of the Royal College of Surgeons of England, and Professor Emeritus of Ophthalmic Medicine and Surgery in University College, London, delivered the annual oration to the Medical Society of London recently. His subject was "The Medical Tradition".

Whether medicine ever became in the popular jargon of the day, nationalized or whether it preserved its autonomy and its influence would be determined by the ability, the personal character, and the moral endowment of individual practitioners rather than by schemes of professional reorganization. While we had other names and other forms of disease than the ancients, and other means of healing, medicine was always the same. Modern medicine was on a surer and more positive foundation than in the days of Hippocrates, but the classification which he gave of the causation of disease, and of the nature and significance of symptoms still holds good. There was not, and could not be, absolute certitude in medicine. The most skilful physician could never be sure of curing his patient, but he could be sure of employing all his knowledge and skill according to the established rules of his art.

CANADIAN DOCTORS AND UNCANADIAN DISEASES

By John L. Todd

McGill University, Montreal

NO doctor is properly established in his profession who has not a broad understanding of disease processes other than those usually affecting the inhabitants of the locality where he practises.

Once, and perhaps still in isolated communities, medicine could give a satisfying life and livelihood to men who ignored the existence of unfamiliar disease and, guided by symptomatic therapy, found nothing to prevent them from placing each pathological condition enountered in one of the classifications taught to them by their teachers, text-books and experience. To-day, the situation has changed. To-day, in Canada, no serious student of medicine, graduate or undergraduate, can afford to know nothing of the pathology of diseases affecting men and animals in other parts of the world even though those diseases have never been heard of near his home.

It is so for two reasons. First, because with the development of rapid transportation no doctor can limit the diseases which may come to him, or to which he may be carried; second, and more important, increased knowledge of diseases prevalent in unstudied areas has thrown, and is throwing, light upon many of our daily problems of pathology which have been unperceived, misunderstood or unexplained.

Mechanical transportation by water, land and air, has made the world very small. Students from the ends of the earth gather at a university; a score of men from tropical countries study medicine at McGill. There is no part of the world to which a Canadian doctor may not be called; about three hundred graduates of McGill live in warm climates. Nowadays, there is scarcely a disease which is never seen in a city through which an important travel route passes; cases of malaria, hookworm, sleeping sickness, elephantiasis, and relapsing fever are occasionally treated in Montreal.

Look at a map of the world. One of the basic causes of the war was the land-hunger of the millions close-packed in the European

peninsula. Belgium has 665 persons to a square mile; Great Britain, 374; Italy, 330; Germany, 325; Austria, 242; France, 191; just before the war Germany was increasing her population at a rate of about one and a half per cent. yearly; the increase in the rest of Europe was less rapid. Where is the land by which these peoples and their progeny, undestroyed by fute war, are to live? Westward emigration ceases on our Pacific Coast—Japan has 385 persons to a square mile and China 172. Parts of the northern and southern temperate zones are sparsely populated; the United States has 34 persons to a square mile, South Africa, 15; Argentine, 7; Canada, 2; Siberia, 2; Australia, 2. But, already, there are no large unsettled and unappropriated areas in Canada, and the United States will soon import, rather than export, food stuffs.

Look at a map of the world. The tropical belt is usually said to extend between 23° 7′ north and 23° 7′ south of the equator. In all that area, excepting parts of southern Asia, there are few people and little more than outposts of European civilization. Phœnicia, Greece, Rome, Spain, Portugal, Holland, France and Great Britain, during the past three thousand years have successively and repeatedly endeavoured to establish off-shoots of their stock in the tropics. For a time, some of the colonies were prosperous and seemed likely to be permanent; northern Africa is dotted with the ruins of Grecian and Roman cities; in 1650 A.D. Portuguese Loando had 15,000 persons—now it has about 3,000; the success of Spain's empire in the Americas covered more years than does the history of the United States. Many causes, local and European, economic and political, contributed to the failure of these colonies. One cause and the most important, was always present; the tropics were unhealthy for Europeans. The last twenty years have shown that disease, not climate, caused that unhealthiness. In the last twenty years, means of preventing or curing diseases that were formerly irresistible have been discovered. Europeans, with their accustomed domestic animals, can now work and live in areas where their fathers perished. When the French failed at Panama they had buried 20,000 persons. When the Canal was built, the death rate in the canal zone was less than the death rate of New York. To-day, Europeans spend years in Africa without malaria; yellow fever, already a rarity, may soon disappear from Central and South America; in Northern Australia, a virile, all white population is proving that it can work with its hands and thrive in the tropics.

There are many places in the tropics where extreme heat

combines with lack of water, or with great humidity, to produce physical conditions—a climate—that are almost intolerable. Europeans will not readily live in such places. But, there are thousands of square miles in tropical Africa and in tropical America where heat is never so oppressive as it often is at midsummer in our own Quebec. These are almost virgin lands; they need and will reward richly European road-builders, administrators, engineers, overseers and husbandmen. Africa is no longer a dark continent; it is the largest remaining field for European colonization and it is near Europe. Berliners thought themselves next door to the Perisan Gulf; Basra and Lake Chad are equidistant from Berlin. The distances between Newfoundland and Vancouver, London and Lake Tanganyika, Moscow and Lake Baikal are equal; to us, six days of railroad travel is a commonplace. Aerial communication brings Africa still closer. A Zeppelin was over Khartoum with supplies for German East Africa when the German forces there surrendered; it returned, without landing, to its starting point in Bulgaria; a British areoplane has flown from London to Delhi; airmen have crossed the Atlantic.

If tropical diseases can be overcome as completely as present successes promise, Africa will be developed infinitely more quickly than North America has been; there is no winter; in certain areas, there are two rainy seasons and two crops can be grown annually; there is a large and usually industrious native population. These factors, alone, make it possible to produce many things in tropical countries much more cheaply than they can be grown in the temperate zones. In addition, life in Europe and North America depends upon many products which can be grown only in the tropics; the war taught the blockaded central European powers and ourselves, our dependence upon palm oils, rubber, cotton, tea and coffee. Finally, in long-settled areas, especially in Europe, land is often valued at a figure higher than its productivity warrants; the price of land in sparsely-settled areas is more directly proportionate with the value in the world market of that which the land produces. Consequently, the cheaper lands of the tropics, quite apart from their greater productivity, and sometimes in spite of adverse bounties and transportation costs, are often able to produce essential commodities, such as meat, grain and fruit, at prices which make the competition of northern countries economically impossible. These facts have already taken many investors and workers from Europe and the United States to the tropics, many more will go; doctors must go with them.

Generations of tradition and of economic association urge and draw British youth to the ends of the earth. Already, the men of Britain, leaving "their scarce-cooled guns" are at work in Palestine and Mesopotamia; fruit-farmers from the Okanagan are planting orange groves in the Holy Land, while a ioint stock company is irrigating the Garden of Eden! Lacking the British traditions and associations, Germany found an active policy of public instruction in the wealth of tropical dependencies a necessary part of the colonial policy which she commenced after the fall of Bismarck. In every large German town there is a tropical museum and on every book-stall there are beautifully-printed handbooks of travel and commerce in the, once, German colonies. One book indicated how a German might gain wealth in the tropics by asserting that no negro should be permitted the prosperity which enables a native trader in British Lagos to employ a white chauffeur!

Germany realized, and realizes that, under modern conditions, her industrial population of 70,000,000 people can not remain at home without a field abroad from which food and raw materials may be cheaply obtained; at the Peace Conference she seeks to be free to send settlers to, and to obtain supplies from, her former colonies as freely as other nations will do. British, French and Belgian experience, as well as that of the Germans, has shown that with modern methods white men, women and children can live actively and healthily in tropical Africa. Within the next few years, many thousands of Europeans will go to Africa to build railroads, to establish inland steamship lines, to manage plantations and ranches, or to take advantage of the many opportunities for external and internal trade. Doctors will go with them.

To Europe, Africa is a foreland, just as is tropical America to our continent. Canada and the United States already have large interests in Mexico and in Central and South America. These interests will increase and, as they grow, doctors will be needed there also.

Look at a map of the world. Halifax and Glasgow are practically equidistant from Sierra Leone; Halifax and New Orleans are practically at equal distances from British Guiana. And, just as Nova Scotia, projecting into the North Atlantic, approaches Canada to West Africa and to British territory in the West Indies, so is British Columbia Canada's gateway to the Pacific, Australia and the far East; Yokohama is sixteen days from San Francisco and but thirteen from Vancouver. During the year ending with March, 1917, the goods exchanged between Canada and countries

where tropical diseases are endemic had a value of about $80,000,000. During the war, Canada's manufactured exports increased enormously. Munitions are no longer required: but, Canada has industries such as milling, fishing, lumbering, mining and the manufacture of agricultural implements in which she produces as cheaply as can any part of the world. The output of these industries will increase, not diminish. From our convenient seaboards, more Canadians than ever before will accompany the exchange between Canadian goods and things which our colder country does not produce.

Canadians come of a colonizing stock; their young men wish to go further; through the war, to do largely has become a necessity for many of them. All of these things combined invite Canadian doctors to the tropics. National interest requires that some shall go. The personal interest of those who do go will not suffer, for they will be well paid in things—money, consideration, understanding—that men desire. Those of our young men who go to these, the latest of the promised lands, will do well. They are fitted for the venture, and Canada's name in the war has everywhere earned for Canadians a new and a wider respect.

The factors which will take increasing numbers of men from temperate to warmer climates will have a reverse effect; more men than before will go from the tropics to colder countries These will bring their ills with them and Canadian doctors, even those practising in country districts, may easily meet patients with outlandish ailments. Recently, in Colorado, every-one of a picnic party developed relapsing fever; it was found that the disease had been caught, with lice, from a group of wandering Bulgarian gypsies. Allusion has already been made to the occasional cases of exotic disease which are never absent from every northern centre of population—Liverpool and London maintain special hospitals to care for them. These diseases may become, for a time at least, endemic; for years, now, plague has been constantly present along the Pacific Coast of the United States; as a result of the war, there have been in England many cases of malaria, and in France of spirochætal bronchitis, among persons who had never left their home-land.

It should not be forgotten that diseases are often called "tropical" because they are now most usually seen in warm countries. We, who live in the northern temperate zone, should not forget these facts; malaria has killed its thousands about Oxford and Chicago, in Southern Ontario and in Flanders; hookworm is as fatal to miners

in Cornwall and Northern America as it is to the poor whites of the Southern States. "Tropical diseases" exist wherever the required conditions are present; if these conditions are altered, the diseases disappear from "unhealthy" tropical countries just as they have disappeared from our own "healthy" temperate climate.

Every Canadian student of medicine should know enough of tropica diseases to deal intelligently with them, should he be called upon to do so either at home or abroad. That is a sufficient reason, but there is a second and a weightier one, for providing instruction in tropical diseases at every medical school. An acquaintance with tropical medicine is essential to a proper understanding of disease, its recognition, prevention and cure.

Twenty-five years ago, comparatively little was known of tropical diseases. Since then, much work has been done. Schools of tropical medicine exist in many of the world's universities. Investigators have been sent to the tropics from every active nation. The records of their work and observations from medical men, hospitals and research laboratories in the tropics form an enormous literature, printed in an extraordinary number of languages; there is no division of medicine which supports so many special periodicals, reviews and quarterlies. The field is a rich one. Researches made in it have been exceedingly fruitful. The discoveries made have been valuable in combatting tropical diseases, and they have thrown light upon unknown things in diseases of temperate climates and, more important, they have widened our understanding of health and disease.

In the tropics a physician can never lose sight of man's relative position in nature. One who studies tropical diseases is not permitted to forget that man is an animal who, in conflict with other living beings, visible and invisible, is continuously striving to maintain himself. He is not permitted to forget that nothing in nature is fixed; that classifications are only convenient aids to memory—for living things will not remain within the limits of a description which once was accurately theirs; that man's immunity against pathogenic organisms is maintained by a constant struggle with those organisms; that these organisms constantly change their character so that the immunity, potent against one strain of an organism may not protect against another strain although it comes from an identical parent stock.

In the tropics, one is not permitted to forget that since man is an animal he often suffers from the same diseases as do other animals about him. In Canada, one sometimes forgets that dogs

have hydrophobia, horses lock-jaw, and we remember that human is different from bovine tuberculosis. The discovery that Texan cattle-fever was transmitted by an intermediate carrier, a tick, gave the cue to similar processes in many human diseases; mosquitoes transmit malaria, filariasis and dengue; lice carry relapsing fever, typhus and trench fever. A study of the malaria of birds explained the life history of the parasites of human malaria. Attempts to cure the trypanosomiases of animals showed the way to our modern treatment of syphilis.

As a rule, a practitioner in the tropics knows more of the cause, process, prevention and cure of the diseases with which he deals than does his confrère who works in a Canadian hospital. The directness of the indications for specific action, and the inevitable promptness with which the proper action is followed by the expected result, make those who are accustomed to deal with tropical diseases impatient of unexplaining empiricism and determined in refusing to be blind to unsatisfactory practice even though it be established by custom.

The destruction of mosquitoes, and the consequent prevention of mosquito-borne diseases, such as yellow fever and malaria; treatment by arseno-benzol which destroys the spirochtæes of relapsing fever, syphilis and other diseases of similar causation; the exhibition of ipecac and the alleviation of amœbic dysentery; these are all instances of efficient, direct and specific action that are not easily paralleled in the everyday control of those diseases which are not usually known as tropical. Practice in a field where right methods achieve specific success makes a demonstrated diagnosis necessitous and always sought. The microscope is the basis of a doctor's work in the tropics; he sees the cause of his patient's disease before he attempts to cure it. For him, the days of "therapeutic tests" and "clinical syndromes" are fast passing; he is accustomed to direct methods.

During the war, a knowledge of tropical diseases helped to a recognition of the part played by lice in the transmission of trench fever and to a search for the animal host the—"reservoir"—of the spirochætes causing Weil's disease and seven-day fever; the spirochætes causing these diseases are found in the kidneys and urine of, respectively, rats and mice. In western North America and elsewhere ticks sometimes cause fatal paralysis in children; had the transmission of disease by "insects" been a familiar idea to those who practised in these places the nature of the disease would not have remained so long unrecognized.

Most of the known causes of disease in temperate climates are bacteria. Some of the diseases of tropical countries are also caused by bacteria; but the best known of them are due to protozoan parasites. Some of them are associated with organisms of uncertain position and of a few the cause is still unknown. The protozoan parasites are much larger than bacteria, and are often actively motile. For this reason, they can be seen with the microscope much more easily than can bacteria. Their visability is doubtless one of the reasons which have caused so much work to be done in tropical diseases and which has contributed to the success of that work; it was one reason which led Ehrlich to use trypanosomes for the researches which gave "606". Many problems of tropical disease remain to be solved; many schools of tropical medicine and many laboratories in the tropics offer facilities for their solution. No other field of study offers more entertainment and greater probability of satisfaction to post-graduates who wish to do research work. And, nearer home, there are things to be done by methods which have taught much to those who study the diseases of hot countries; almost nothing is known of the protozoan parasties of Canadian fauna—and flora; nor do we know how ticks paralyze children and lambs in British Columbia.

It is repeated, every Canadian student of medicine should know something of the diseases that do not usually occur in Canada; he should know something of them because he may be called upon to deal with them and, more important, because a knowledge of them is necessary for an alert and comprehensive understanding of human pathology.

The International committee of the Red Cross announce that the central bureau founded in Vienna to fight epidemics in Central Europe, includes delegates from Poland, German Austria, Hungary, Jugo-Slavia, Ukraine, Czecho-Slovakia, and Rumania. The bureau proposes by means of contributions from the states interested, to assemble a fund for the purchase of medical necessities, co-ordinate the efforts of the governments, establish a sanctuary cordon and generally interest the whole of Europe in the dreadful plights of the peoples who are being decimated by epidemics. Sir David Henderson, director-general of the League of Red Cross societies, has been consulted by the sub-committee directing the undertaking, and he affirms that the establishment in Geneva of the capital of the League of Nations, will greatly facillitate joint national action.

GLYCOSURIA IN PREGNANCY

By Malcolm H. V. Cameron, M.B.

IN 1910 I encountered my first case of glycosuria in pregnancy. My patient consulted me in her fifth month of gestation, and in the routine examination of her urine, I found a reducing sugar in small amount. I made inquiry among my senior colleagues in the hospitals and was assured that a transient lactosuria was a very ordinary concomitant of pregnancy. The literature I then studied confirmed their opinion and I ceased to worry, especially as I found no sign of sugar after the sixth month. The confinement was tedious and choloroform was used to the extent of nearly two ounces. Recovery was uneventful and the patient went to the country to recuperate. She developed an insatiable appetite within a week after this and three weeks later died in diabetic coma despite vigorous treatment. Since this case occurred I have had four hundred and sixty-eight obstetrical cases and have found glycosuria in four. I have permission also to mention two in the practice of Dr. Victoria Reid and two in that of Dr. D'Arcy Frawley. A brief recital of these cases will illustrate the few suggestions as to causation and management of the condition which will be presented in this paper.

Mrs. D., aged twenty-five, primipara, first consulted me in the fourth month of her gestation. May, 1916. In June I found definite glycosuria. Dr. H. M. Tovell determined her carbohydrate tolerance and managed her diet. She was kept sugar-free after July 15th. She was delivered under hyoscine and morphine in the Burnside Hospital, October 24th, 1916. The baby was small, ill-nourished, and only breathed once. Many observations have been made in the interim and her urine has been sugar-free until October, 1918, when she reported herself as three months pregnant. Glycosuria was noted in the fourth month and was immediately brought under control by limiting the diet according to the tables presented by Dr. Tovell in 1916. A trace of sugar was found in

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the last specimen examined, the patient being in the seventh month. She is again noted as case five in this series.

Mrs. S. W., aged twenty-eight years, primipara, brought her first specimen in April, 1918, her fifth month, and glycosuria was discovered on examination. She was at once starved for twenty-four hours and her carbohydrate intake gradually increased according to Joslyn till her tolerance was reached as determined by Dr. Olive Cameron. The diet required constant supervision because of a persistent polyuria until her confinement, August 26th, 1918, when she was delivered of a well-developed male child under morphine and hyoscine with a small quantity of ether in the second stage of labour. No return of the glycosuria has been noted.

Mrs. W. A., aged twenty-five, showed no sign of glycosuria during her first pregnancy, which terminated happily on December 28th, 1916, nor was there any observed until the last month of her second pregnancy. She had a quick and easy delivery conducted, during my absence, by Dr. W. W. Lailey. Specimens of urine examined since then have not shown any trace of sugar until two weeks ago, seven weeks after confinement.

Dr. Reid's cases included a multipara who in four pregnancies showed glycosuria. Each succeeding gestation presented greater difficulty in securing a sugar-free urine, but no diabetes has developed since the birth of her last child. The second case in this series is still under treatment in her last month. She is being restricted practically to vegetables of five per cent. carbohydrate as a diet, but so far has shown no diacetic acid or acetone. There is an associated incompetence of kidney in this case.

Dr. Frawley told me of a case in which a patient, to whom he had been called in consultation, died in diabetic coma ten days after delivery, although the attending physician had satisfied himself that there was no glycosuria at least in the late months of the pregnancy. His latest case was delivered two weeks ago. This patient shewed a true glycosuria of two per cent., or slightly less, for two months before delivery, although she was in apparently excellent health. Examination since delivery has shewn a gradual disappearance of the sugar.

In eight of these cases glucose was, beyond any question, the sugar found. Dr. Reid's first case may have been lactose. My first case must have been glucose, although no differentiating tests were made. In all of the others the fullest examinations of a qualitative nature were done. In two of the cases a condition of true diabetes existed. My first case was evidently diabetic or almost

so before her confinement. For years I have been blaming myself because of having given the chloroform which might have induced the acidosis which precipitated the onset of acute diabetes from which she died. This idea was sustained by another case which came under my notice in which a lad of seventeen, known to be diabetic and under strict diet, was passing urine containing one half of one per cent. sugar. He sustained a Colles' fracture and the nearest practitioner was called, who administered chloroform before reducing the fracture. Two days later the urine was examined and found to contain two per cent. sugar. The diabetes progressed rapidly and the boy died about two months later. I am assured that the labour in the one case and the trauma in the other had probably much more to do with the onset of the diabetes than had the chloroform. At the same time it would appear to be most unwise to use chloroform during confinement in these cases.

In Dr. Frawley's first case it is more than likely that a diabetes of pancreatic origin existed before pregnancy began, but that the fœtal pancreas served for both maternal and fœtal organisms until delivery occurred, when the strain of labour made a demand upon the metabolism of the mother that it was unable to meet in the absence of the temporarily engrafted pancreas of her child. This may also have been the explanation of my first case. Such cases as these without the tragic ending may justify French, in Latham and Crile's work, in saying that some cases of diabetes improve under pregnancy. The other cases require explanation. It is too easy to say that lactose is excreted when the lacteal glands begin to undergo hyperplasia in the months immediately preceding lactation and will be found in the urine. Undoubtedly lactose may appear in the urine and may mean nothing more than the normal stimulation of mammary glands as they are being prepared for their function after the birth of the child. It is also true that glucose may be found in the urine from the same source. An inverting enzyme may break up the lactose into galactose and glucose and the latter be excreted if it cannot be stored in the muscles or the liver. In either of these instances the sugar may be depended upon to disappear from the urine after lactation begins. This simple explanation may be sufficient in many cases but in very many more it is quite inadequate. The excretion of sugar in any form or degree is a matter of derangement in metabolism that is much more complex than can be so briefly indicated, and when the further derangement of pregnancy is added, the complexity is vastly increased.

It is not within the scope of this discussion to attempt to unravel the relations and inter-relations of organ and function in the processes of metabolism, normal or abnormal. I merely beg to offer one or two clinical observations which bear upon the subject.

Dysfunction of the pituitary gland may result in acromegaly and this has frequently associated with it a condition of glycosuria. Dysfunction of the thyroid gland may result in Graves' Disease and this has frequently associated with it a condition of glycosuria. In either case an imbalance in metabolic process occurs, and the cause of such imbalance must be ascertained, if these alterations in function in the glands mentioned or in other glands of the endocrine system are to be explained.

Pregnancy, as we know, does demand a hyperplasia of the thyroid gland, and, as we know almost as well, of the hypophysis also. The generation of the auto-catalyser, by which growth is maintained or accelerated, belongs to the anterior lobe of the pituitary body, as the experiments and conclusions of Brailsford Robertson have placed beyond peradventure. The provision of this catalyser demands a hyperplasia which may run beyond the necessities of the case or which may involve the posterior lobe of the pituitary body, in which case acromegaly may, presumably, develop. This is illustrated by a case in my practice in which a young woman of prepossessing appearance showed, in the last month of her first pregnancy, changes which were strongly suggestive of acromegaly. The skin became coarse, the lips thick, the voice altered and the face acquired a heavy look quite different from her normal appearance. She speedily regained her beauty after her confinement. In her case there was no glycosuria for a reason to be given later. Should this involvement of the posterior lobe affect chiefly or entirely the pars nervosa a condition of polyuria and polydypsia may arise. Of this I have one illustration. A patient now under the care of Dr. Frawley is secreting twelve to fourteen pints of urine daily which has a specific gravity of 1002, but shows no pathological content. This must be of pituitary origin as, were it due to schlerosis of kidney tissue, there would be hyaline casts and other evidences of kidney disease.

The bearing of all this upon the subject is made evident by a careful reading of Cushing's experiments upon the pituitary gland. The condition of pregnancy calls forth a hyperplasia of the hypophysis in order to produce the auto-catalyser of Robertson. This is expended upon the growth of the fœtus or, in the case of the young patient, upon the growth of the mother as well. This hyperplasia,

as it affects the posterior lobe, results in a condition of hyperglycæmia with decreased carbohydrate tolerance, and this, added to the normal hyperalimentation of pregnancy, may result in glycosuria. Should the hyperplasia affect the pars nervosa chiefly, a polyuria, without glycosuria or diabetes insipidus, will follow. Thus it appears that the relation between diabetes insipidus and glycosuria depends upon the very narrow margin of chance, that in a general hyperplasia of the pituitary body in its posterior lobe the pars nervosa acquires a stimulation greater than does its epithelial envelope. Again, should the epithelial portion of the posterior lobe fail to take part in the general hyperplasia or should its secretion be hindered in its entry into the cerebro-spinal fluid, a condition simulating hibernation results. The patient displays a syndrome of adiposity, mental sluggishness, increased carbohydrate tolerance and a definite hypoglycæmia. Should the hyperplasia affect chiefly the anterior lobe, the hyperglycæmia mentioned will not occur and thus, although acromegaly may develop to an extent, glycosuria will not be its accompaniment, although acromegaly usually is associated with glycosuria as the whole gland is affected consistently. This explains the case I have instanced.

The practical conclusions to be deduced from the consideration of this group of cases are important. In four hundred and sixty-eight cases of pregnancy, five cases of glycosuria have been found. In four of these the sugar was definitely identified as glucose by either the fermentation or osazone tests. In the other the patient died of diabetes. The inference is obvious. The finding of a reducing sugar in urine from a pregnant patient is a serious matter. Lactosuria may be a trivial affair, but before a patient whose urine reduces copper hydroxide in a test solution is dismissed as being in no serious condition, the fullest tests should be performed to ascertain if lactosuria be the real condition or not. In my cases lactose was completely excluded. Where glycosuria exists, true diabetes may be about to manifest itself or may be already in existence. The causes of glycosuria other than diabetes have been indicated. Such of these causes as are consequent upon pregnancy and which cease to operate once pregnancy is ended, merely require careful management until they disappear. A regulation of diet more or less strict will keep the symptom in abeyance. A careful selection of anæsthetic and any means possible to lessen the shock of delivery will perhaps prevent the onset of such changes in the endocrine gland system, already strained beyond the normal, as are indicated by the glycosuria and which might result in diabetes. The diag-

nosis of true diabetes in these cases is of supreme importance. Should the glycosuria be controllable by diet regulation, the frequent examination of the urine may be sufficient to protect the patient during gestation. This will not, however, decide whether or not her diabetes is under control because of fœtal hormones. nor will it differentiate a glycosuria due to hyperalimentation or secretion of inverted lactose. The only means of arriving at definite conclusions is by estimation of sugar in the blood. The method is simple provided one has a proper colorimeter. Any one who can make a hæmoglobin estimation with a Sahli apparatus may make a sugar estimation with the proper equipment. In all cases in which sugar occurs early in pregnancy or persists after delivery, a test should be made in order to determine whether or not a hyperglycæmia be present. It can do no harm if carried out in any case of glycosuria and may be the means of averting tragedies such as two of these cases have presented. The ingestion tests for carbohydrate tolerance would arrive at approximately the same conclusions but they are difficult of execution and may be most disagreeable to patients already in a state in which nausea is an ever-haunting spectre.

An alarming increase in the cancer death rate is noted by Dr. Francis Carter Wood, director of the Crocker Special Research Fund of Columbia University and of the pathological department of St. Luke's Hospital. The increase in England and Wales has been enormous and Dr. Wood believes that the same phenomenon will be observed in the United States during the next year or two. For a great many years cancer has been slowly increasing in England, though physicians are at a loss to account for the increase.

In the United States in 1914 the death rate was 79·4 per 100,000. In 1900 it was 63 per 100,000. But this does not compare with Switzerland, where it was 126·7 per 100,000. Under Dr. Wood and Professor William H. Woglom, a course in cancer research will be given at the Columbia Summer School in the Crocker laboratories. The work will consist of lectures and laboratory exercises. The classification of human and animal tumours will be first considered. The method of transplantation of tumours in animals will be shown. The simpler procedures for fixing, sectioning, and staining tissues for diagnosis will be demonstrated.

VITAL STATISTICS—WHAT THEY TEACH

By Joseph-Wilfrid Bonnier, M.D., D.P.H.

Chief of the Division of Vital Statistics of the Province of Quebec

YOU often hear, sometimes with a touch of irony, that figures are dangerous weapons, that they can be made to say almost anything. Only those who do not know what statistics mean will speak in such a manner. Statistics are like some instruments which may injure those who do not know how to use them, but this does not establish the fact that instruments are useless.

Statistics are of value in every line. They are in use everywhere nowadays. The business man, the merchant, the captain of industry, the financier, etc., cannot succeed without them. To attempt to proceed without them is like talking in the dark, or sailing without a compass.

Go and hear a lecture, a speech, or read an article on some important question, and you will notice that figures are always enlisted to strengthen the argument.

Governments of all countries recognize, more than ever before, the importance of obtaining accurate statistics, which are published each year in the official reports, in order to determine the resources of the country.

But, what is more important, for a people, is to know the human capital, its gains from births and immigration, and its losses from deaths and emigration.

The true wealth of a country lies not solely in its lands, its waters, its forests, its herds, its dollars, but also in the health and welfare of its inhabitants.

A healthy man is worth more than a sick man; a young man, in all his strength is worth much more than an old man or a weak child; a married person much more useful than a mere bachelor.

Hence the importance that a government know the number of its inhabitants, their age, sex, social conditions, occupation, nationality, their birth rate and death rate.

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There is one particularly striking fact brought out by the study of vital statistics: that is, the constant decrease in the birth rate and death rate in all the civilized countries.

I am glad to state that, during the four years of this horrible war, the birth rate in our province has decreased very little, while the death rate has fallen noticeably, especially during 1917.

Let us consider the factors which render the modern hygienist apprehensive of the future. They are numerous, but I shall cite a few.

For over two generations, the birth rate has been smaller each year, because people marry at a much higher age than they did in earlier time. It follows that these late marriages are less productive than early ones. We think to-day, only of leading a selfish life and of getting all the pleasure possible out of it. Before marrying, the consorts often agree as to the number of children they shall have, without any regards to the divine laws and country's interest. Women are taking up all sorts of trades, more or less harmful to their delicate nature and antagonistic to their noble function of motherhood. The working woman is independent. They object to being tied in wedlock. They live as they please. And, in certain countries, the divorce laws are too lax and cause the ruin of numberless families.

Another great cause of the low birth rate has been the war, which has taken thousands of young men who would normally have married and reproduced. Among those who have returned, many are mutilated and physically unfit to marry.

I have also stated that the general mortality rate is reduced each year. Why? The following are the principal causes:

Preventive medicine, which, with its vaccines and serums, save thousands of lives each year.

Curative medicine, which is perhaps the most progressive of all sciences. The art of healing is practiced with more success to-day than formerly. Children who were formerly left to die now receive proper treatment. A child congenitally sound, unless he be taken away by accident or a severe contagious disease will live if he be given a rational treatment and appropriate diet. The life average is longer to-day than a generation or two ago.

Surgery. The surgeon of to-day undertakes without fear most hazardous operations, which he would never have dared before the discovery of antiseptic methods. His wonderful instruments effect miraculous cures.

Sanitary engineering, with its modern methods of water purification and sewage disposal.

The protection of working classes and shorter working hours for women and children which have a tendency to reduce labour accidents.

Greater popularization of public and personal hygiene. This comes from the activities of life insurance companies, from philanthropists, social workers, public lectures and diverse publications.

Finally, *lower birth rate*, which is by far the principal cause of lower death rate. In fact, where there are less children, there are generally less deaths to register.

If we are to understand the influence the birth rate has on the death rate, we must know that the infant death rate is always very high in the first year of life, hence the absolute necessity of studying with care the mortality rate at different ages of life from 0 to 15 years, 15 to 60 years and then from 60 upwards.

The death rate of children under one year is always very high. This rate falls rapidly during the second and third year to reach its minimum between the ages of 12 to 15 years, then ascends slowly but surely up to 60 and 65 years; it then rises rapidly to the extreme limits of life.

Comparisons which we, sometimes, try to make between the general death rates of two municipalities, two cities or two provinces, often have no value and do not mean anything, because no account has been taken of the different ages, of the population, sexes, social conditions, nationality, occupations, etc., etc.

To attempt to compare the mortality rate of two localities, where one contains many young children and old people and the other many young adults but few children, and few old people, would show ignorance and dishonesty.

To demonstrate the importance of my argument, let us take two cities, A and B, each of which has a population of 1,000 inhabitants, but differs in this that A has 100 children from 0 to 10 years, while B has 150 of the same age.

If in the two cities the death rate among the children under 10 years is 50 and the death rate of persons over 10 years is 15 per thousand, and if we apply these specific rates to the number of persons under and over ten years, we find that, in the city A the general mortality rate is 18·5, whereas in the city B, it is 20·2 per 1000 inhabitants.

This marked difference is due to the fact that, in B, the number of children under 10 years is one third larger than in A.

It is plain that in a comparison between two cities, two countries or two provinces, we must first establish the exact figure of the population, subdivide it into different groups of ages, study the sexes, social conditions, occupations and nationalities.

If these distinctions are not made, it is not right to compare a residential with an industrial section, a summer resort with a manufacturing town, a rural community with a city. The western provinces, with a population composed mostly of young adults with better chances of long life, cannot be compared, from a statistical point of view, with the old provinces of the east, with their numerous population of children and old people, whose mortality rate is always higher. It is evident that such comparisons are often made with the purpose of disparaging the province of Quebec. There is often no mention made of our large infantile population which would explain the high general death rate. I may state that the census of 1911 showed that the province of Quebec, in spite of its inferior population, had 42,500 children, under ten years, more than the province of Ontario.

In conclusion, let me tell you this: Always beware of statistical comparisons; never accept them without careful study, to be sure that the basis of comparisons are just and comparable between them. Always differentiate the populations, in order to know the groups of ages, sexes, etc., and, when a population includes high proportion of old people and young children under 15 years, do not be astonished if the death rate is higher. It is only natural that it should be. If, on the contrary, the population is largely composed of young adults, the death rate is lower, unless exceptional causes, such as epidemics, accidentally raise it.

THE NERVOUS CONDITIONS ASSOCIATED WITH INFLUENZA

By Goldwin W. Howland, M.D.

Neurologist to the Toronto General Hospital

THE nervous side of the late influenza epidemic may be considered from two aspects, namely, that of the general practitioner and that of the specialist. It would be unwise for me to attempt to discuss the conditions met with by the physician in general practice as among the hundreds of cases you have seen, my experience would be but a drop in the sea of your experience. But yet I must once more draw your attention to the very marked toxic affection of the vaso-motor system, resulting in the cyanosis which marked so many of the worst cases, and which would vary even as one examined the case.

This influenza plague exhibits on its nervous side, the same characteristics as one sees in the related phenomena of the respiratory system, namely, a condition in which the resistance of the individual is so lowered that other infective organisms are given the opportunity to attack the system, organisms which, under normal conditions, would have been easily repelled by the guards of the body, and as a result we find a new set of diseases, rarely encountered in our yearly routine and in some cases entirely new to our former experience.

It is of the greatest interest to notice that this acute group of infections following influenza may be localized in quite different parts of the nervous system, and it is necessary to separate the f llowing groups:

I. Acute peripheral neuritis.
II. Acute poliomyelitis of influenzal origin.
III. Acute encephalitis inferior.
IV. Acute encephalitis superior.
V. Acute toxic psychosis of influenzal origin.

While these forms of the epidemic may be distinguished, yet

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it is necessary to emphasize the fact that between these groups there are many types made up of cases in which there is a combination of the signs of psychical, encephalitic, and neuritic symptoms, so that the acute infections of the nervous system following influenza should be termed acute encephalo, myelo-neuritis, with the proviso stated that the disease tends to localize itself as a rule in encephalon, bulb, cerebellum, cord or peripheral nerve.

In contradistinction to these generalized conditions, one must take up a second division of the subject, and call attention to the fact that all types of local conditions occurred after the epidemic and two classes of these must later in this paper be referred to, namely the local neuritides, and the psycho-neuroses.

Acute peripheral neuritis.—The following case, presented to-day, shows the neuritic class fairly well. This young lady had an attack of an infection in February, followed one week later by recrudescence, or an attack by an allied germ, with headache, vomiting, and coryza. On attempting to get up she found she was weak in the legs and arms, and this condition has persisted up till now, gradually getting worse for the first few weeks. Her sensory symptoms at the time were numbness in the hands, pains and numbness in the legs with cramps of the muscles. On examination to-day, she has a decided but mild anæsthesia of the neuritic type in the legs extending up towards the knees but gradually diminishing in the upward direction. There is no marked loss of sense of position, which may be present in these cases. The bladder and rectum have escaped.

There is, on the motor side, a characteristic symptom that has been almost diagnostic of all this group of acute influenzal infections, namely, facial paralysis, and this is on both sides. The muscles show the characteristic grouping, namely, the whole limb is affected and the proximal as much as the distal end, indeed, some authors have stated that the proximal being more affected than the distal part, is a diagnostic point, but in this case presented the neuritic tendency or localization is the more marked, and I think the distal slightly more involved. But there is no segmental grouping to the atrophy, and this separates the case from the typical infantile paralysis cases, while the sensory symptoms isolate it from Landry's paralysis. The reflexes are diminished and, indeed, lost at the knees.

Poliomyelitic or myelitic group.– To distinguish this class from the neuritic is almost impossible, and it is probable that both types are pathologically on the same footing. With the same onset, the

same paralysis, it might be better clinically to isolate the cases with proximal paralysis of limbs and with no peripheral loss of sensation under this myelitic class, but the treatment and prognosis are in no way dependent on the diagnosis, and it is better to look on the cases as being pathologically of myelo-neuritic origin.

The encephalitis inferior cases.—As we ascend towards the brain-stem we enter the field of cases very improperly called the lethargic encephalites. The simpler cases of this class show symptoms almost wholly due to implication of the brain stem.

The following patient well illustrates this type of case:—This man in February, after a slight cold, noticed that he could not lift the side of his mouth. By the next day both sides of his face were paralyzed, and his eyelids showed ptosis. These are the cardinal group of symptoms in lethargic encephalitis, namely, ptosis and facial paralysis, and I would like to remind you of the associated facial paralysis in the myelitic group.

He also was found to have diplopia from paralysis of the external rectus. Then there was a slight difficulty swallowing from vagus affection, and a general sensation of weakness and fatigability and great mental lethargy, showing the approach to a superior encephalitis. The reflexes were active and the progress of the case was to recovery.

Turning aside from this case to others that have been reported, innumerable other symptoms may occur from lesions in the pontine and associated regions, such as deafness, giddiness, tongue paresis, inability to move the eyes laterally, palate weakness, and so on, and with these cases there were all degrees of lethargy and cortical involvement.

There is one group of these cases that may be given a separate position and that is those associated with cerebellar like symptoms, that is, the cases with marked a taxia and tremor with usually some brain stem involvement. While there are certainly cerebellar types, yet it is difficult to feel sure that many of these are not due to cortical conditions. If one now takes into consideration that the encephalitis inferior cases are frequently associated with encephalitis superior affection, it becomes comparatively easy to pass to the types where the signs are purely in the upper brain areas, *i.e.*, encephalitis superior.

A typical case is that of a woman who developed an infection, and in a few hours became so lethargic that it was only with difficulty that she could be roused from her semi-comatose state. With

no signs of meningitis, yet she gradually became more and more lethargic, and died in five days.

Associated with cases and frequently with those less severe in origin and course, various cortical signs may occur and among these may be mentioned hemiplegias, affections of the optic fields, sensory loss of sense of position and allied phenomena, rigidity, catatonic-like musculature, and various mental disturbances. It must also be mentioned that true optic neuritis has been frequently described, making the diagnosis from abscess of the brain a difficult one. The reflexes are of all varieties and no index to the type of case.

The last class naturally follows on this description of which they are only a variety, and I refer now to the acute toxic psychoses following influenza.

As an instance, take the case of a woman who shows some slight difficulty walking, but in a few days becomes dull and apathetic, shows loss of sleep, or on the contrary becomes lethargic, memory is defective, and her powers of recognition of objects and people are gradually lost. Hallucinations develop, and she becomes more and and more deeply psychically slowed, and gradually losing control of bowels and urine, she becomes a degenerative case and dies.

Compared with this case there are several types of acute amentia described, and the general picture is that of a toxic psychosis.

In these cases, whether neuritic, myelitic, encephalitic or psychical, the lumbar puncture shows a clear fluid, frequently under high pressure. The cell count varies from normal to fifteen or occasionally higher, the cells are of the lymphocyte type. Globulin is normal or slightly increased. In many cases there has been a small-celled infecting agent found and the question as in the pneumonias is: Is the condition due to the organism so recovered or to the influenzal germ itself?

This picture I have presented to you is one side of the infective conditions following influenza, but there is another though less interesting field, namely, the sub-acute infections following the epidemic.

Following the same method of discussion as with the acute conditions, one may first note that there has been a great increase in the cases of local neuritis, in patients who may have only had mild attacks of the influenza itself. In the first place there are the cases of facial paralysis occurring apart from any other symptom and a host of other forms of local neuritis. One of the most inter-

esting of these, of which I have seen several cases, has been one with the symptom of pain in the region of the larynx, accompanied by shooting pain into the ear, with spasm of the throat muscles and difficulty in swallowing, evidently a true tic douloreux of the vagus. Of the cases of brachial and lumbo-sacral neuritis there has been an increase, people being unusually open to disease since the epidemic, and parallel with the neuritis is the similar great increase in the cases of rheumatism of probably streptococcus origin.

The other great increase of sub-acute diseases beside neuritis has been in the neuroses and psychoses. Influenzal neurasthenia is so common that it assures one that the condition is of infectious origin, and not due to the psychical conditions associated with nursing and the great psychical strains that accompanied the sickness of others. The cases often came on after mild attacks of the infection and there has been a characteristic slowness about the rate of recovery and the exhaustion associated with the disease. Then the psychoses are certainly on the increase since the epidemic and in this regard one may simply raise the statement that under all conditions where there is a decrease in the resistance of the individual there will be a corresponding tendency in the individuals who are disposed to mental deterioration to show the degenerate tendency. With these brief facts I conclude this paper, repeating that associated with influenza an acute series of conditions may attack the nervous system, and that following the disease there may be a sufficient impetus to cause mental deterioration, or some neurosis, in those inclined to such conditions.

As an addenda I should like to add that in a recent number of the *British Medical Journal* a writer has stated that the germs of these influenza associated nervous diseases are all filter passing organisms, and that they are not identically the same for the varied locations.

DEATH RATE ABOVE AGE OF FORTY

By W. H. Hattie, M.D.

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IT is well known that there has been such substantial progress of late in lessening the prevalence of many diseases which formerly contributed largely to the mortality returns as to materially reduce the death rate of most civilized countries, and to considerably increase the average of longevity. According to American figures, the average age at death in 1910 was 38·7 years as contrasted with 35·2 years in 1900—an addition to the average age of 3·5 years or practically 10 per cent. The English Life Tables show the mean expectation of life at birth in the period 1849-53 was, for males, 48·56 years; for females, 49·45 years. In the period 1891-1900, this expectation had advanced to 52·87 years for males and 55·71 years for females, a gain of 4·31 years (equivalent to about 9 per cent.) for males and 6·26 years (equivalent to about 12 2-3 per cent.) for females. In the second of these periods, 55·2 per cent. of all children born should reach the age of 60, as contrasted with 48·5 per cent. of those born in the earlier period.

The significance of these figures should be apparent to everyone, and surely is sufficiently indicative of the value of well organized work on behalf of the public health. And yet an analysis of the mortality returns of the United States shows that the advance has been due almost wholly to the control of the communicable diseases and to the reduction of the death rate amongst infants and young children. There has been betterment of the death rate in the higher as well as in the lower age groups in England, but in the United States the experience has been otherwise, and the statistics of that country show that the tendency has been to a steady increase in the mortality rate of those who have passed the age of forty.

This observation has led me to make some study of our Nova Scotia returns, with the object of determining whether or no the experience of our province in this respect is similar to that of the

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United States, and while this study is admittedly superficial, I feel that it justifies me in placing before you certain findings, and in suggesting that a similar study in other Canadian provinces is deserving of consideration. Perhaps the comment which follows the statement of these findings may not be so readily justified.

In Nova Scotia, statistics are available for a period of ten years only, and it is manifestly impossible to draw any very definite conclusions from the experience of so short a term. We have, however, sufficient data to assure us that there is plenty of opportunity for bettering our health conditions generally, and such figures as are available, while they do not indicate a very serious trend towards such an alarming increase in the death rate at higher age periods as is evident in the United States, nevertheless afford us reason for giving some heed to the forty years plus problem, even though it may not, on the surface, appear to be a matter of such immediate concern as other problems which we are called upon to solve.

The death rate from all causes in Nova Scotia in 1917-18 was 17·9. So high a rate is in large part due to the Halifax disaster of December 6th, 1917, which caused the immediate death of upwards of sixteen hundred persons and was a factor in causing the death of many more. In addition, two colliery explosions (at New Waterford and Stellarton) resulted in one hundred and fifty-three fatalities. The normal death rate for the year might, by a rough computation—after allowing for the proportion of deaths from natural causes which might reasonably have been expected amongst those who perished in these disasters—be estimated at 14·7. This represents an increase over the death rate of 1908-9 (the first year for which we have statistics) of ·3 per 1000. When, however, we compare the death rates in the age-above-forty group, we find (again endeavouring to estimate what our experience would have been had there been no explosions) that last year 53·4 per cent. of the deaths were in this group, as compared with 49·2 per cent. in our first statistical year.

Inasmuch as the rates fluctuate considerably from year to year, it is better to compare the figures of groups of years rather than of single years. We have but two quinquennial periods to compare. In the second of these, the deaths in the age-above-forty group numbered 53·0 per cent. of the total, while in the earlier period they numbered 51·3 per cent.

Such figures may be taken to indicate a tendency to conditions similar to those which obtain in the United States, although they

have not the same statistical value as an estimation based on a distribution of population according to age groups, which I am unable to make in the absence of corresponding census figures. It is not likely, however, that the variation in population at different ages would be so great as to materially affect these returns.

It is customary in dealing with such a subject as that which now concerns us to refer to the economic importance of conservation of health and life, and much stress has been laid upon the large economic saving which has been effected in various countries by the diminution of the death rate amongst infants and that from tuberculosis and other communicable diseases. This is, indeed, undoubtedly very great, and is alone sufficient warrant for the maintenance of vigorous public health activities. It is, however, possible that the economic value of a comparable reduction in mortality in the conditions which prevail especially in the mid-age period would be nearly if not fully as great as that which attaches to the control of diseases which exact their heaviest toll amongst the young. For to the potential value of the young life there must be added the value of experience gained, and the cost at which it has been gained, in estimating the loss caused by death at a time when there should still be a reasonable expectation of many years of productiveness.

We have learned from Cazalius that "a man is as old as his arteries" and Metchnikoff told us, in substance, that the duration of a man's life bears an inverse ratio to the length of his large intestine. A wicked epigrammist, who deserves to be unknown because of the part of his epigram which I dare not repeat, informs us that "a man is as old as he feels". Out of these three modern texts one might evolve a treatise which would point the way by which much premature death might be avoided.

The reason for this faith is to be found in the death returns from the registration area of the United States. Here the death rate from organic disease of the heart, from Bright's disease, and especially from diseases of the arteries, has been steadily increasing of late years. In the case of arterial diseases, the increase in ten years amounted to over 396 per cent. There has been a marked increase also in the death rate from cirrhosis of the liver and cerebral hæmorrhages (both degenerative diseases), from diabetes, and from cancer. It is to these conditions, especially, that the increased death rate at ages over forty is attributable. All of these diseases are more or less controllable, so that we have it in our power to at least limit their prevalence. And if we are to escape an experience

similar to that which is now causing our neighbours across the line no little uneasiness, we must give earnest heed to these things. The fact that these conditions have an almost invariably fatal ending gives to the death returns a value as a clue to their prevalence which does not obtain in the case of most diseases, for which we must collect morbidity as well as mortality statistics. The increased death rate may be regarded a clear index of increased prevalence of these conditions.

A study of the mortality tables shows that the dominant factor in the production of the increased forty-year-plus death-rate is disease originating in the arteries. From the evolutionary standpoint, the mammalian heart is but a special development of the thickened portions of arteries which are found to serve the purpose of a heart in some of the lowly forms of animal life. The kidney, too, is to be regarded as a compact grouping of blood vessels, cunningly arranged for purposes of filtration. Consequently heart, arteries and kidneys, constitute in essence but a single system of which one part cannot be deranged save at the ultimate expense of the other parts. Thus conceived, we must admit the preponderant part played by or through the arteries in the production of chronic, degenerative diseases. Irritation of the muscular coat of the arteries, produced by toxic substances added to or insufficiently removed from the blood-stream, may not only cause increase in the blood pressure, but play a part in producing alterations in the walls of the blood vessels, with the resulting enlargement of the heart and the chronic inflammatory and degenerative changes in the kidneys which mark men for early death.

If we eliminate the changes in this cardio-vasculo-renal system which appear to be an associated part of the general sclerosis which so usually comes on in well advanced life, we may broadly classify the causes of the primary changes in the arteries under three main heads: (1) Conditions of the environment which demand a persistent activity of the circulation; (2) interference with the normal chemical changes in the body concomitant with the retention of poisonous substances in the blood and (3) acute infections and localized septic conditions.

Under the first heading are to be grouped worry, excitement and overwork—and perhaps more especially mental overwork, for we must modify our former belief that sustained physical exertion alone is a competent factor in producing either thickening of the vessels or increase of blood pressure. These conditions have their most potent influence in the large centres of population. Abnormal

expenditure of nerve force, acting reflexly through the vaso-motor nerves, would appear to be effective in increasing the blood pressure. The artificial life of the city, demanding not only excessive activity in business affairs but affording so much opportunity for very strenuous diversions, is doubtless responsible for no small share of the vascular change which is of such serious import. The struggle for wealth and for social position commonly go hand in hand. As might naturally be expected, it is found that men suffer more than women from the resultant strain. The woman of fashion may be able, by the simple process of turning day into night, to recuperate fairly well from the exhaustion caused by the dinner party, the theatre, the late supper and the later dance, but the man to whom she has attached herself is less fortunate. In order to maintain his social position he must also maintain his business position, and he can do both only by depriving himself of the opportunity for sufficient recuperation. And then, though perhaps in a different place on the social scale, there is the devotee of the gaming table, the dance hall and the wine room, whose diversions expose him to a number of physiological risks, and whose merry life is in consequence very apt to be a short one. In this case, however, causes which are included under our second heading are also usually operative, and inasmuch as the proportion of those who live at the very high tension is, after all, comparatively small, this second group of causes is doubtless of relatively greater importance.

Amongst the causes which exert a malefic influence upon the chemical changes so necessary to proper functioning of the organs, we have to think of poisonous substances engendered within the body, either as the result of bacterial action or of disordered metabolism, and of those which are retained in excess because of imperfect elimination. Of bacterial products, we regard those of the treponema pallidum as being especially destructive, but several other germs, causative of infectious diseases, pus formation, etc., form toxic substances which are capable of doing much damage to the tissues of the circulatory system. The stress which our dental friends lay upon mouth infections is not to be forgotten in this connection. The prevention of bacterial diseases is therefore of very definite importance in preventing the onset of the degenerative changes which mean so much after age forty has been reached, and the reference here is not merely to infections acquired in adult life, but perhaps even more particularly to those of childhood.

The conditions which are consequent upon or attended by disturbances in metabolism are perhaps more difficult of control,

but they should not escape careful attention. Much at least may be done to limit their influence upon the arterial walls by proper medication and regimen. And careful attention to the functioning of skin, kidneys and bowels, will do a great deal towards securing the elimination of the waste products which have so pronounced an effect in inducing arterial changes. The free use of water, both externally and internally, should be encouraged, and the greatest care should be given to overcoming the habit of constiptation, which is so common and often so resistent to treatment. The use of the extensively advertised nostrums for constipation should be discouraged, and every case of this disorder should be made the subject of careful study and specialized therapy.

Apart from these endogenous poisons, we must consider those which are introduced from without. In this connection we think first of the habit-forming drugs, and particularly of alcohol. An investigation recently carried on by the Actuarial Society of America and the Association of Life Insurance Medical Directors, embracing a study of the records of 2.000,000 insured persons and covering a period of twenty-five years, showed that the extra mortality amongst men who occasionally used alcohol to excess amounted to over fifty per cent. and caused a reduction of over four years in the average life of these men. The chairman of this investigation is authority for the statement that "persons who have always been total abstainers have a mortality during the working years of life of about half of that among those who use alcohol to the extent of at least two glasses of whiskey per day." More recently a large American Insurance Company has published an analysis of its records, which indicates that the mortality amongst total abstainers has been 16 per cent. less than the expected mortality, and amongst very abstemious persons, 3 per cent. less, while amongst very moderate drinkers it has been 11 per cent. greater, and amongst less moderate drinkers 29 per cent. greater than the expected mortality. Such observations as these give special point to a verse from Ecclesiastes: "Be not over much wicked, neither be thou foolish; why shouldest thou die before thy time?" It, at any rate, would seem to indicate that the disuse of alcohol as a beverage is most desirable in the interest of health and longevity, as well as in the interest of morality and social advance generally. Recent parliamentary enactments in respect to the sale of intoxicants will, after a few years, demonstrate whether this assumption is correct or not.

Other extraneous poisons are those which are associated with the prosecution of certain trades. Of these lead may be cited as

an example. Perhaps the effort now being made in many countries to safeguard the workers in trades which entail a certain hazard from the absorption of poisonous materials may, in comparison with other efforts on behalf of health, seem disproportionate, but it is effort in the right direction and has the endorsement of everyone who has at heart the physical welfare of his fellow man.

Then we must not forget the prejudicial effect of a badly constructed dietary, and even of excessive indulgence in a well balanced dietary. We know well that too free participation in a diet which abounds in protein results in the evolution of by-products which, when they gain entrance to the blood, act as irritants to the walls of the blood vessels, and so lead to vascular thickening or increased tension, or both. While this especially applies to meats, it is known that rich and highly seasoned foods in general, and the alkaloids of tea, coffee and cocoa, have also an injurious effect upon the vessel walls. Excessive use of these articles should therefore be avoided. But over-indulgence in any kind of food, especially if habitual, may have a direct mechanical influence in raising the blood pressure and thus in leading to arterial and consequential disorders. In the words of St. Paul, "Everyone that striveth for the mastery is temperate in all things."

All these factors, however, have been operative since the beginning of history, and cannot in themselves alone be responsible for the increased prevalence of degenerative conditions which has only been apparent within quite recent years. Moreover, as we have seen, there has been a decrease rather than an increase in the proportion of such conditions in England and Wales. It would seem, therefore, that some local condition, of comparatively recent origin or development, must be a determining factor in the American experience. Perhaps this is to be found in a failure of the people to adapt themselves to the changed mode of life which has been a sequence to the introduction of modern conveniences. The telephone, the electric tram, the motor car, the elevator, the free delivery of mails, the labour saving devices which have so largely reduced the physical effort formerly demanded in many trades, have all had a part in lessening muscular activity, while the accumulation of people in the towns has required a large percentage of those who had been accustomed to out-of-door occupations, demanding considerable muscular exertion, to take up sedentary in-door pursuits. This change came about comparatively slowly in England, allowing of some measure of adaptation, whereas in America it has been revolutional rather than evolutional. And then in England there is

more general participation in healthful sports and recreations than in America, where the disposition of the crowd is to sit on a bleacher and watch a professional do the sporting, rather than to take a personal part in the play. The human body does not adjust itself rapidly to marked variations in the demands made upon it, and unless nature is assisted when a speedy adjustment is demanded, we must expect disaster sooner or later. Everyone appreciates the benefit which accrues from intelligent exercise, and it would seem reasonable that the individual, whose changed conditions of life have deprived him of the opportunity for expending muscular energy at his work, should be enjoined to make good this loss by judicious indulgence in suitable sports or exercises.

There is much that is pertinent to the matter in hand which cannot be referred to at all in this communication, but a mention of the part played by cancer in contributing to the increased forty year plus death rate would seem to be really essential. There is fairly general agreement that cancer is becoming more common, and while our Nova Scotia statistics do not show that a tendency to its increase in our province is very marked, they at least show that it is sufficiently prevalent to demand our attention. More than 90 per cent. of deaths from cancer are in those of the forty year plus age period. We lack information which might be utilized in formulating preventive measures, but we do know that the hope of saving a life threatened by cancer lies in early diagnosis and prompt operation. The people should be instructed in the signs which usually proclaim the beginning of a cancerous growth, and should be urged to place themselves in the hands of a physician immediately on the appearance of a suspicious symptom.

Early diagnosis is important not alone in cancer, but in the case of the degenerative conditions also, as an essential to the early treatment necessary if a stop is to be put to their progress. For this reason many life insurance companies, for purely business reasons, now offer to their policy holders free medical examinations at frequent intervals. This has been found a profitable venture. An organization known as the Life Extension Institute was established in New York some years ago, and subsidiary to this a National Health Guard, the objects of which are "to upbuilt American vitality, to prolong the healthful, useful years of life and make them more livable". This shows the trend of the day in reference to measures directed towards the conservation of human life and human usefulness. The possibilities for good which would associate with a general adoption of a plan which would provide for a methodi-

cal medical examination of our people, say once a year, are sufficiently obvious. In this way the first signs of degenerative processes could be detected, and the mode of life could be modified so as to check or limit their progress. One can not but feel that, in this way, a magnificent result might be achieved, and I should like to suggest that periodic examination of those on the "panels" should be made a feature of state health insurance schemes.

To-day the saving of human life has a public interest which it never had before. The demands upon men's energy and resourcefulness have been steadily growing more exacting, and it is becoming more and more difficult to maintain a place in the struggle for existence. The position which a nation is to achieve and maintain in the contest for supremacy must be determined by the efficiency of the people of which it is composed. Mental efficiency and physical efficiency depend upon good health more than upon anything else. We have emerged from a desperate war, which required for its successful prosecution an enormous expenditure of our best blood, as well as of our less valued treasure. We have emerged from it proudly triumphant, but at a terrible cost. Now we must enter upon a period of competition with other nations infinitely keener than any which has ever been experienced in the past. To maintain our supremacy, we must be a virile, vigorous people. Otherwise all the sacrifice of our heroic soldiers and sailors will have been in vain. Strong, capable, efficient men and women were needed for carrying on the war to a satisfactory issue. They are just as necessary now to carry on every interest in Canada and the Empire. It is the patriotic duty of every Briton not only to keep himself robust and vigorous, but to do all that lies in his power on behalf of the health of his neighbour. In this every one of us has a splendid opportunity to do valiant service for Canada and for the Empire to which we proudly owe our devoted allegiance.

Editorial

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS

THE eleventh Congress was held in Atlantic City on June 16th, 17th and 18th, 1919. In many ways this Congress holds a unique position in the minds of the present generation. Occurring as it did on the eve of the proclamation of peace—a peace which it is anticipated will end the terrible ravages of the past five years—there was much that had to deal with the lessons to be learned from the concentrated medical work of this period. In addition, there was a spirit of enthusiasm and hope that medical science would continue to work for humanity in the same co-operative manner as it had done in the recent four years.

The addresses in medicine and surgery strongly revealed the fact that medical science during the piping times of peace had fallen into a state of self satisfied complacency. It needed but the sharp emergency of this terrible struggle to reveal the chinks and gaps in the armour of medical and surgical therapeutics. The glamour of the pursuit of detail had gone far to obscure the urgent necessity of seeking fundamental facts in these matters. This was evident not only in so far as the scientific knowledge of disease was concerned, but also in regard to the fundamental principles of medical and surgical practice.

The lessons developing from the war threw in strong relief the tremendous importance of dealing with the human organism as a whole. New combinations of symptoms strongly indicated that disease of one organ is of necessity disease of the whole, as no one important function may be deranged without a reflex disturbance occurring elsewhere,

and so often does the final picture completely obscure the initial process.

Also in the realms of reparative surgery! The basic question of the healing of wounds far over-balanced the exhaustive details of operative technique so evident in former times. The great surgical question of the present war appeared to have been: How may the healing of wounds be hastened and the resulting disability reduced to a minimum. A completely satisfactory treatment of wound infections remains unsolved, although important points have received their proper recognition. The constant presence of more or less infection and its constant relationship to the healing process must be realized. It was also quite evident that the animal organism was considered a most efficient destroyer of deleterious micro-organisms, provided it were given a fair fighting chance through *the decks being cleared early for action* by the administration of the proper prophylactic sera and the removal of all vitally damaged tissue. Then it must have a fair field without meddlesome interference.

Wars in the past frequently have been mile stones in the advance of medical science as for example the achievements of Ambrose Paré and Wright. They were individuals. On the contrary, one of the outstanding impressions of the Congress was the strong indication that whole hearted co-operation was the spirit of the times—the combined and co-ordinated work of many for the good of all. Let it be hoped that this lesson may not be forgotten, in order that medical science in all its phases may continue to advance on one broad front.

THE PRESIDENTIAL ADDRESS

THE address of the President was noteworthy in that he departed from the usual custom of outlining the year's progress of the Association and resisted the temptation of putting his personal views on the great subjects of the day

before the meeting. He confined himself entirely to welcoming the members to his native city, and to outlining the history of the origin of the Association, and formulating a scheme for consolidating the good feeling between the French and English speaking people, which has been so marked since the beginning of the war.

The historical references to the early days of the Association and to those who were instrumental in organizing it were not only very interesting but were exceedingly instructive especially to the younger members. So many advances have been made in medicine and surgery in the last generation that one is liable to belittle the work of those who laboured before that time and made these advances possible.

No one can disapprove of the idea of making the British and French schools of post-graduate work better known in this country.

It does not seem, though, that much progress can be made in post-graduate work until definite organization work is done in providing the instruction and collecting the clinical material in such a way that it is readily accessible to the student. It is still too early to tell how successful the recent attempts to do this have been.

The idea of our own French and English universities granting free courses to each other's graduates is worthy of serious consideration, and the good feeling, which has proposed it, is to be much commended. We hope that the idea will be followed up to a conclusion by the institutions concerned.

THE ADDRESS IN SURGERY

ONE of the features of the Quebec meeting was the address by Dr. Jasper Halpenny of Winnipeg on the association of the hospital with surgery. The careful blending together of all the information available on this subject, makes the address a most valuable one.

The necessity of the adequate training of the surgeon before he attempts major operations would seem to be too obvious to the profession and even to the public to require much comment. This is not the case, however, and especially in the western portions of Canada, where the hospitals are open to all physicians, who have a license to practise. The main difficulty is where to draw the line as to what surgery the general practitioner is qualified to do. Unquestionably the latter insists that he is capable of doing more than he is generally fitted for, while on the other hand the surgeon will frequently allow him nothing more difficult to do than a vaccination. If the surgeon be protected by insisitng that only men with long years of surgical instruction behind them be allowed to operate, will he concede that, having spent so much time at this special work, he has disqualified himself for general practice?

It would seem that only by the surgeons retiring from the general practitioner's field can the profession support a move to restrict all surgery to those who have had years of special training in this work. This would undoubtedly be a move to the advantage of the general public and consequently a benefit to the profession. In this way the duties of both would be better accomplished.

The duties of the Board of Trustees and the Medical Superintendent were well brought out in the address. The importance of the medical superintendent is being better appreciated each year and the better hospitals realize the necessity of adequate remuneration for this position if they are to get this work properly done.

The necessity for a hospital to have teaching, in order to maintain its efficiency, is being gradually brought before the public. The profession has long been agreed on this subject and none are more emphatic on this point than those engaged in teaching. Having observant students continually about, keeps all the members of the staff from getting lax. In this connection internes are included as students.

The duties of the hospital to the internes are seldom lived up to. Here an alert superintendent is necessary to keep the Board of Management informed of what members of the staff are lax in this way. It is only by giving the internes a quid pro quo for their years of service that a hospital can be sure of getting the best men for this necessary work. Otherwise the hospitals, who realize this duty, will soon secure the desirable men to the detriment of the other institutions.

The need for facilities for research in hospitals is mentioned. Unfortunately although frequently alluded to in presidential addresses it is rarely acted on by our Canadian hospitals. It is here that our better hospitals are weak. This is so much the case that they are losing altogether some of the better young men to the profession in Canada.

CINEMATIC AMPUTATIONS

THE work of Professor Putti of Bologna always makes fascinating reading so we take pleasure in drawing attention to a report on this subject appearing in another part of this issue. This report has been submitted to Major-General Fotheringham as a preliminary to having these methods extensively undertaken in Canada.

No part of surgery has been so much improved by the experiences of the war as that dealing with amputations. The advances made in this branch are nothing short of marvellous, and surgeons five years ago would deem the results attained to-day as beyond the realms of possibility. The greatest advances in this work have been made by the French and Italian surgeons and to Professor Putti must be given the highest credit of all.

The report by Colonel Gunn is too brief to give an adequate description of the life that Professor Putti is able to transmit to artificial limbs by his cinematic operations. He has been able to accomplish this, too, for the vast majority

of his cases and not for a few demonstrators such as we see advertising the different make of limbs. It is necessary to see his cases en bloc to be able to fully realize how he converts an otherwise helpless man into a useful and contented member of society. The application of these methods to our Canadian soldiers will be welcomed.

The International Red Cross Committee at Geneva has called a convention of the Red Cross organizations of the world to be held at Geneva thirty days after the declaration of peace. This call was issued at the request of the Red Cross Societies of Great Britain, France, the United States, Italy and Japan, whose representatives have constituted themselves as a "Committee of Red Cross Societies" to formulate and propose a world extension programme of Red Cross activities in the interests of humanity. The conception involves not merely effort to relieve suffering humanity, but to prevent suffering—not alone the suffering of one people, but an attempt to arouse all the peoples to a sense of their responsibility for the welfare of each other throughout the entire world. The inception is both ideal and practical: First that its supreme aim is humanitarian; and second in that it seeks means and measures to meet the tragic crises which are daily recurrent in the lives of all mankind. The operation of such a plan will be an important contribution towards the success of the League of Nations and the plan should be viewed as a vital factor in the larger undertaking.

A resolution was recently presented to the United Health Congress placing it on record as opposed to the "existing monopoly in arsenical preparations" for the treatment of communicable diseases, and in favour of encouraging widespread distribution at as low a cost as possible. The resolution also favoured their manufacture by the provincial governments, and the admission of all reliable preparations.

Dr. Charles H. Herty, former president of the American Chemical Society, outlined a plan for a $10,000,000 foundation for drug research in an address delivered before the New York Academy of Sciences. He suggested the possibility of utilizing one of the great breweries soon to be abandoned, which thus he said would be converted into an institution where ways could be found for reducing to a minimum the physical ills of the race. The aims of the society's foundation would be twofold—the acquirement of knowledge of the effects of drugs on the human body, and the fundamental reasons thereof, and independence of the rest of the world, especially Germany, in synthetic medicaments. Dr. Herty affirmed "that statistics just compiled from Government records show that in the fiscal year preceding the war we imported one hundred and eighty-five synthetic medicinals at a valuation of $1,033,000. Ninety-five per cent. of this came from German factories."

He pointed out the need of a great institute in the country where the ablest research workers among the chemists could study life problems and gain true insight of the fundamental reasons for the action of medicine upon the body—an institution where, through the creation of fellowships, manufacturers can submit specific problems for investigation and solution under the most favourable conditions of expert work and abundant equipment. Measures for such an establishment have been rapidly advanced, and a nation wide endorsement of the plan has been received from chemists, pharmacologists and manufacturers.

Approval of the principle and leading features of the bill to amend the patent medicine act was given at Ottawa before the special Commission of the Commons. The act provides that in future every patent or proprietory measure must obtain annual license, and must be known by a number. The bill also provides for the appointment of an Advisory

Board which will, among other things, consider means of making all medicines having more than two and a half per cent. of alcoholic content unsuitable beverages.

The medical superintendents of all the Ontario hospitals have been called together in conference by the Provincial Secretary to discuss plans and suggestions connected with the efficiency and standing of the medical institutions of the Province. The intention is to rebuild and strengthen the staffs of medical assistants and nurses at the various hospitals, to cope with the ever increasing need for such work, and develop at each institution the medical and scientific side of hospital life, particularly in research work, thus placing these institutions in the front rank of medical work as it is understood to-day. The aim is to establish a medical centre which can be regarded from all sides, and particularly by the medical fraternity, as one place in the district where the highest attention will be paid to scientific and professional advancement.

Sir Arthur Newsholme, K.C.B., M.D., in the course of an address on "Some Problems of Preventive Medicine of the Immediate Future", delivered at a special general meeting of the Academy of Medicine in Toronto, dealt with the advanced steps taken along public health lines by the government of Great Britain. He took the stand that "the treatment should be a public expense, as it is as much a community matter as primary education, free libraries, etc." He strongly advocated the provision of proper facilities for the care of expectant mothers and their babies as a factor necessary to the nation's well being.

Another fact brought out by the war, Sir Arthur stated, is that British scientists are at least the equal of those of Germany. He urged a widespread propaganda aimed at the prevention and proper treatment of tuberculosis.

In three groups of diseases, respiratory, tuberculosis and venereal, he declared comparatively little progress has been made to successfully combat them. Under the first class he mentioned influenza, on which, he said, medical men must admit that they are still painfully ignorant in methods of prevention. He commended the Child Welfare work carried on in the City of Toronto, and suggested methods by which voluntary organizations can assist, in the amplification of the work of the authorities, or before provision is made by the States as a result of municipal efforts.

Dr. John Beattie Crozier is a Canadian who has won his way by unaided merit to the highest rank of Britain's intellectual aristocracy. On his seventieth birthday recently he received a letter expressing warm appreciation of his "eminent services to British scholarship and speculation", and his "unselfish endeavours for human welfare". The letter contained the signatures of leading public men, writers, physicians, scientists, editors, historians, social workers and political economists. Few men have had so significant a tribute paid them in their lifetime as this spontaneous testimonial by Dr. Crozier's contemporaries.

At the annual dinner of the Canadian Medical Association in Quebec, Dr. Grondin, president-elect of the Association, announced that by special arrangement with Mgr. Francois Pelletier, rector of Laval University, that institution would be pleased to receive, free of charge all young doctors, graduates of other Canadian universities, who wish to follow the courses in medicine at Laval for one year. In return, he said, they would ask English universities in the other provinces to extend the same privilege to French Canadian doctors graduating from Laval.

The Association

GENERAL REPORT OF PROCEEDINGS OF QUEBEC MEETING

THE fiftieth annual meeting of the Association was held in the old city of Quebec June 25th, 26th, and 27th. While a comparatively small meeting, it was nevertheless a success from many points of view. It seemed fitting that this meeting should be held in the city in which fifty-two years ago the Canadian Medical Association saw its birth. It is probably not known to the present members of the Association that the great majority of those who attended the first meeting in 1867 were French-Canadian physicians. It is worthy of note that of the eighty new members registered at the recent meeting, sixty-three are of that race. That such a number of French speaking physicians should attend a meeting conducted practically altogether in the English language is certainly praiseworthy. These gentlemen were able not only to understand and appreciate the papers given in English, but were also able to take an intelligent part in the discussions. We hope that we may count on their continued support, and in fact have received the distinct assurance of President Grondin that the interest shown in the Association at Quebec will be continued.

The total number attending the meeting was 197, the majority of whom were from the Province of Quebec. The attendance from Ontario was disappointing. The other provinces too were represented by small numbers, but this was to be expected, especially in the case of the western provinces, owing to the difficulty of transportation and to the fact that Winnipeg and the West were barely recovering from the effect of the prolonged strike which involved certain of the transportation companies.

The sections were fairly well attended. Further reference will be made to their activities in the next number of the JOURNAL

Many important resolutions were considered by the Executive Council and forwarded to the general meetings for discussion. These also will be published in near issues. We would like, however, to call attention here to the recommendation that in future

all resolutions to be submitted at the meetings of the Association should be typewritten in duplicate and placed in the hands of the Secretary in time for presentation at the first meeting of the Executive Council. This meeting is, by resolution of the Association, to be held in Vancouver the day before the official opening of the meeting. This will afford the Council an opportunity to carefully consider all resolutions before they are submitted to the general Association.

Much praise is due to the President, Dr, Grondin, to his very able Secretary Dr. Vallée, and to the Chairmen and members of the various committees who were responsible for the excellent arrangements for the meeting. The Association is much indebted to them for the splendid reception accorded to those who were fortunate enough to attend.

The meeting next year will be held in Vancouver under the Presidency of Dr. R. E. McKechnie at a time to be decided upon by the Committee of Arrangements. It is hoped, however, that a date will be chosen which will permit our members to attend the International Congress to be held in Brussels in the month of August.

AUDITORS' STATEMENT

Chairman of the Finance Committee,
Canadian Medical Association,
Montreal.

Dear Sir:—

We have the honour to report that the regular audit of the books and accounts of the Association has been completed for the year ending December 31st, 1918.

The attached statement shows cash receipts and disbursements for the period.

A balance of $397.04 was brought forward at the beginning of the year and this has been increased to $474.65, which amount is carried forward to 1919.

We found the books in very good order, receipts and vouchers being on hand for cash disbursements, and all our requirements as auditors have been satisfied.

Yours faithfully,

E. B. SAVAGE & CO.

Montreal, June 10th, 1919.

RECEIPTS AND DISBURSEMENTS, YEAR ENDING DECEMBER 31st, 1918

Receipts		
Balance in bank, January 1st, 1918		$397 04
Annual Fees, paid direct	$2,331 34	
" " paid by draft	3,532 90	
		5,864 24
Special Illustration fund		123 30
Reprints		535 32
Sundries		26 31
		$6,946 21
Disbursements		
Editorial Secretary's Salary		$427 50
Refunds Paid Provincial Societies:		
Alberta	$60 50	
British Columbia	24 50	
Manitoba	42 50	
New Brunswick	33 00	
Nova Scotia	27 50	
Saskatchewan	19 00	
		207 00
JOURNAL Account:		
Renewels and new subscriptions	$2,739 40	
Illustrations and sundries	160 83	
		2,900 23
Reprints		680 81
Clippings		84 00
Montreal Medical Journal Co.		
Payments to stockholders—$5,000.00 at 6 per cent		300 00
General Expenses:		
Auditors' fees	20 00	
Hamilton meeting, shares of expenses	225 00	
Postage	220 00	
Salary, Secretary's Assistant	1,018 67	
Stationery and printing	116 95	
Sundries, telephones, etc.	88 30	
Travelling expenses	197 10	
Typewriter desk	46 00	
		1,932 02
Balance in bank, December 31st, 1918		474 65
		$6,946 21

Certified correct,

E. B. SAVAGE & Co.,
Chartered Accountants.

Montreal, June 10th, 1919.

REPORT OF MEETING OF THE AMERICAN AND CANADIAN SECTION OF THE INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS

THE twelfth annual meeting of the American and Canadian Section of the International Association of Medical Museums was held at Atlantic City on Saturday, June 14th, last. Professor Oskar Klotz, president of the Section, was in the chair. Thirteen new members were elected to membership and the following officers for the ensuing year: President, O. Klotz, Pittsburgh, Pa.; first vice-president, W. M. L. Coplin, Philadelphia, Pa.; second vice-president, H. E. Robertson, Minneapolis, Minn.; third vice-president, H. T. Karsner, Cleveland, Ohio; councillors: A. S. Warthin, Ann Arbor, Mich.; M. C. Winternitz, New Haven, Conn.; R. A. Lambert, New York; R. M. Pearce, Philadelphia, Pa.; C. F. Silvester, Washington, D.C.; J. Ewing, New York; W. G. MacCallum, Baltimore, Md.; secretary-treasurer, Maude E. Abbott, Montreal; assistant secretaries, Louis Gross and Eleanor Shanly, Montreal.

The chairman in his opening remarks dwelt upon the need of active co-operation of the members of the Association at this time of reconstruction when the active interest of all must be elicited to meet the difficulties that were being encountered in the accomplishment of museum technique, both in the obtaining of glass ware for museum purposes and in other ways. The value of museum teaching and the need of closer association between the pathological and clinical teaching of the schools, and the museum proper was emphasized and the importance of a closer affiliation with the Association of pathologists and bacteriologists and this society of expert museum workers.

A report was presented from the committee on the organization of an American made supply of square glass museum jars. The difficulties in the way of the accomplishment of this manufacture were chiefly the expense of the metal moulds for the various sizes of jars, one of which alone cost $700.00. As the individual moulds were permanent, the high cost of manufacturing was an initial one and would soon decrease, so that if sufficient orders could be obtained to induce the manufacturer to support this initial outlay, the jars would be in time supplied here practically as cheaply as they had been in the past from Germany. The matter had been

taken up by the Scientific Materials Company of Pittsburgh, who had already several moulds for different sizes, and who supply a very good jar with a special glass cover with a bar for the suspension of the specimen. Sample jars were sent by this firm to any one desiring them, and orders would be filled after September 1st, next.

A lively discussion followed upon the importance of developing the American manufacture of museum glass ware, and the feeling was strongly expressed that purchase from the Central Powers should be discouraged and the home manufacture be supported in every possible way. The following resolution was passed:

"Resolved that it is the sense of this Association that we should not purchase scientific supplies obtained from the Central Powers or their agents; and that every effort be made to further the development of the American manufacture of all scientific supplies."

The following programme was presented:

Symposium on War Museums:

"On the selection, clinical application and value of war material for army medical teaching purposes," by H. T. Karsner, Cleveland, Ohio.

"Overcoming difficulties encountered in the collection, storage, and shipping of specimens in France," by H. E. Robertson, Minneapolis, Minn.

"On the handling of pathological material at the Army Medical Museum," by James Ewing, New York.

"On the handling of pathological material received for the Canadian National War Museum," by Maude E. Abbott, Montreal, presented by Major Fraser B. Gurd.

"Demonstration of Canadian War Specimens," by Major Fraser B. Gurd.

Papers and Demonstrations.

"Demonstration of gross and microscopic lesions in the respiratory tract, (1) Associated with influenza, and (2) Initiated by irritating gases," by C. A. McKinlay and F. P. NcNamara, New Haven, Conn.

"A method of preparing lungs for the museum, with lantern slides illustrating influenza lesions," by James Ewing, New York.

"Typewriting labels on museum jars," by Captain C. F. Silvester, Washington, D.C.

"Demonstration exhibit on the comparative anatomy and

development of the vertebrate heart," by Maude E. Abbott and Eleanor Shanly, Montreal.

"Motion picture films on cell mitosis," by W. O. Owen, Washington, D.C.

Extremely interesting exhibits were shown on "Ezperimental emphysema," by Dr. Sarah R. Kelman, Iowa City; "Reconstruction of the vascular tree of organs by injection," by Dr. L. Gross, Montreal; and "A series of vertebrate hearts from (*a*) crocodile, (*b*) turtle, (*c*) elasmobranch, and (*d*) teleost fishes," by E. L. Judah, Esq., Montreal.

Obituary

DR. WILLIAM NICHOL

Dr. William Nichol, the oldest and one of the most widely known practitioners in Brantford, early in June died at his home in that city, after a long illness. He contracted influenza last October. He was in his eighty-second year. He graduated in medicine from Chicago University and immediately commenced the practise of his profession in Brantford where he spent a long and useful life and where for many years his name had become a household word.

He was one of those far sighted Canadians who first realized the supreme importance of assimilating foreign settlers into the national life. He engaged in this work in his own city for many years teaching in the school for foreigners. The stamp of his character and life has been left upon many national institutions as well as their branches in Brantford. He was one of the group of four forceful men who took a prominent part in the early organization of the Y.M.C.A. in Canada. He was a Liberal in politics and a Presbyterian in religion. A widow and four children survive him.

J. P. SCOTT, HON. CAPTAIN AND Q.M., C.A.M.C.

Hon. Captain and Quartermaster James Peter Scott, C.A.M.C., died in the Canadian Red Cross Officers' Hospital, London, England, on May 16th, 1919, of malignant disease of the stomach, at the early age of thirty-three.

A native of Scotland, Captain Scott was a barrister by profession, and at the outbreak of war was practising in Winnipeg. Proceeding overseas as a private in the 16th Battalion, he was severely wounded at Ypres in April, 1915. He transferred to the C.A.M.C. four months later, his wound having left him unfit for further service in the infantry.

His administrative abilities secured him rapid promotion, and he was attached to the office of the A.D.M.S. Canadians, London Area, from its inception, first as superintending clerk, and after receiving his commission in 1917, as officer in charge of details.

He is survived by a widow in England.

DR. J. A. McKENNA

Dr. J. A. McKenna, for many years so closely associated with the Indian interests in the North West Territories, died recently in Victoria, British Columbia, where he resided. He was born at Charlottetown, Prince Edward Island, in 1862. Dr. McKenna embraced a political career when he entered the Dominion public service in 1886 and was, for a time, private secretary to Sir John A. Macdonald. In 1897 he effected, in conjunction with T. G. Rothwell, a settlement with the government of British Columbia for the administration of Railway Belt lands. Two years later he concluded a treaty with the Indians of the Athabaska and Peace River districts, under which the Indians surrendered their lands to the crown; and in 1906, he concluded a similar treaty with the Indians in the Churchill River locality. He was assistant Indian commissioner for a time, and later inspector of Indian Catholic schools in the prairie provinces and North West Territories. He was a member of the joint provincial and Dominion commission which a few years ago investigated the Indian question in British Columbia, and since the completion of that work, had been living in Victoria. He leaves a widow and seven children.

The death occurred at Olds, Alberta, of Dr. Thomas Gordon Playford, following an acute attack of diabetes. He returned to his home on Winnipeg in the spring, from service overseas with the Imperial army where he had gained his captaincy, and a Military Cross and bar. In April he went west, preparatory to opening a practice but succumbed after a very brief illness. His future was full of promise and he was only in his twenty-third year. His

death will be felt as a great loss, not only to his family, but by all with whom he came in contact.

Dr. George Osborne Hughes, M.D., Virginia, U.S.A., and M.R.C.S., L.R.C.P., London, England, died recently in Manitoba at the age of forty-nine. He had been ill for four weeks with typhoid fever.

Dr. James Salmon, who was in his ninety-seventh year, died on June 19th, after a brief illness at his home in Simcoe. Dr. Salmon graduated in medicine at twenty-three years of age and practised with success in what was then a densely wooded country for a long period until his retirement from active practice. He is survived by his widow to whom he was married more than sixty years ago.

The death occurred on June 10th of William Forest, B.A., M.D., who for the past twenty-five years has resided in Toronto. He was born in Scotland but came to Canada at the age of fifteen. He graduated from the University of Toronto in both arts and medicine obtaining the gold medal in medicine and the silver one in arts. After graduation he went to Bradford where he practised medicine for some time but eventually he embraced the profession of teaching and became principal of the Bradford High School.

Dr. C. W. Trick died at his residence in North Winnipeg, Manitoba, on June 3rd, after a brief illness. He had but recently recovered from an attack of pneumonia, but on May 20th was stricken with apoplexy, and gradually sank. He was born in Brock township, Ontario, in 1875, but on his family moving to Winnipeg he pursued his studies there, graduating in medicine from the University of Manitoba in 1899. Soon afterwards he established himself in practice in North Winnipeg, where he remained permanently.

Miscellany

News

THE WESTERN PROVINCES

IMPORTANT legislation, the most advanced along social service lines, has been passed by the Manitoba Legislature, as embodied in the report of the committee to the Manitoba Public Welfare Commission. This announcement was made by Dr. C. K. Clarke, who presided at the annual meeting of the Canadian National Committee for Mental Hygiene. He referred to the progressive step the association had made and stated that a similar movement was planned by British Columbia.

Dr. Hincks gave some startling statistics from Manitoba. In the jails 60 per cent. of the inmates were feeble-minded. A number of these quite out of proportion to the percentage in the general population, were foreigners, an indication of the need of immigration restrictions. It is estimated that every incurable patient detained in the Provincial Hospital for the Insane costs the Manitoba government from $5,000 to $7,000, hence, to quote from the report, "It is not a difficult problem to calculate the saving to be effected by dealing as intelligently with insanity as we do with small pox or other preventable diseases.

THE establishment of the Dauphin Medical Clinic marks an important advance in the profession in that district to render more efficient service to the general public, and it may rightly be described as unique, being the only clinic in Manitoba in which all the medical men are united.

THE Brandon General Hospital Training School, Graduating Class, 1919, broke all records in the recent examinations. The lowest marks obtained in Obstetrics were ninety per cent. The members of the class also did splendid work in surgery, no nurse receiving less than eighty-five per cent. The examiners stated that the papers were of a uniformly high order. Twelve nurses graduated in June.

EDMONTON has been chosen as the city for the 1920 convention of the Canadian Public Health Association and the Ontario Health Officers' Association. It will be the eighth annual congress. Dr. Heber C. Jamieson of Edmonton, speaking on child welfare work, said that Alberta had considerably more trouble with the 33·6 per cent. of foreign born children than with the remaining 66.4 per cent. of British born, owing to the foreigners of the province holding to their traditions and refusing to adopt up to date methods in vogue in Canada. The resolution favouring the manufacture of the drug "salvarsan" by provincial governments was carried unanimously.

A PUBLIC health programme of considerable extent is being planned in Alberta. It is in some respects of a radical nature and is being taken up by the department of public health under the Hon. A. G. MacKay, minister, and Dr. T. J. Norman, deputy minister. The provincial board of health has now power to issue any order to make any regulation that might be found necessary in any municipality or any portion of the province for the "prevention, mitigation or suppression of disease. In certain parts of the province the local boards had been tardy in acting, and this fact was in large part responsible for the amendment. Under the present system the provincial board, as in the case of a smallpox outbreak, can deal at once with the territory affected, whether it covers one municipality or several. It can deal with the vaccination of all people in a district, regardless of municipal boundaries. In unorganized units the provincial board is given full power to act. Heretofore municipal councils were obliged to furnish medical and nursing aid only to the indigent poor. Under the present regulation a municipal district may pay a doctor or a nurse, or both, a regular salary to attend, free of charge, any and all residents who may need their services. Many sections of the act deal with sanitation. There are five sanitary inspectors, all returned men, now on duty throughout the province, with instructions to prosecute property owners and occupants of unsanitary premises and in obvious and flagrant cases the member of the local board of health who have failed to do their duty. Under the venereal diseases act the department has sent out bulletins, and an up-to-date compendium of instructions to all medical men, hospitals, and similar institutions, and its agents are reaching out to see that the provisions of the act are being made applicable when necessary. The department, in addition to this, is making

a survey of the province to ascertain what points are not within striking distance of a doctor or a nurse and to these points will be sent nurses specially trained in obstetrics and authorized by the legislature last session to practice midwifery and to charge such fees as the provincial board may consider reasonable.

Calgary has planned a hospital scheme to co-operate with the militia and the department of soldiers' civil re-establishment in giving them the full use of their equipment, and doing it without putting either the city or the government to too much expense. The militia department was administering the convalescent homes and the soldiers' civil re-establishment assumes no authority over men until they are discharged; consequently the cases looked after by this department are less than those looked after by the militia, and will continue to be so until the men are discharged and the positions are reversed. The hospital building at present under constructon in Calgary is to cost somewhere in the neighbourhood of $20,000. The city will build another extension if the government will co-operate, and are prepared to go to the extent of $60,000. Though a modern hospital is needed one of marble construction is unnecessary. Under discussion it transpired that a high-priced building in a few years with a change of methods becomes useless. The cottage type is superseding the more permanent type it being found that the treatment of tubercular cases have been revolutionized by the hutment system. The patients have infinitely greater comfort, splendid sanitary condition and plenty of light, they can also be classified and segregated if necessary. Should the government co-operate with the city, Calgary will have its hospital benefits centralized.

A movement is on foot to hold a convention of directors of hospitals in Saskatchewan next fall for the purpose of reviving the Saskatchewan Hospital Association, which was formed some time ago, but which had only one meeting. At the regular meeting of the board of governors of the Regina general hospital recently, the matter was brought before that body in a letter from the secretary of the Weyburn Hospital, asking the chairman of the board, as convener of the association, to call another meeting. The view was almost unanimously expressed that the association should be kept alive and authority was given to look up records of the personnel of the directorate of the association and any other records that may be in existence.

THE annual convention of the Saskatchewan Medical Society was arranged for July 15th to the 17th, and was to be held in Regina this year. It is estimated that between two hundred and three hundred delegates from all parts of the province will attend, and an extensive invitation has been given to all members of the profession.

A FAVOURABLE consideration has been given lately to the new project of erecting a $250,000 Union Hospital in the city of Moose Jaw. Representatives of the surrounding municipalities of Redburn, Baildon, Hillsboro, Roger, Pense, Eyebrow, view the scheme with approval and request that council of each municipality mentioned appoint, at the earliest possible moment, a representative as a member of the hospital committee, provided for in part one of the Union Hospital act. When all the representatives are appointed a meeting is to be called for the purpose of organization.

AT the closing session of the meeting of the Canadian Medical Association, held recently in Quebec, the city of Vancouver was selected as the place for the next annual convention, Dr. R. E. McKechnie being chosen as President-elect.

Dr. H. E. Young, secretary of the provincial health department, was elected president of the Canadian Health Association on his recent visit to Toronto to attend that body's annual convention. Before returning to the Coast, Dr. Young went to Ottawa to attend the social hygiene conference called by acting-Premier White. Dr. Young does not expect the federal health department will interfere with provincial jurisdiction in any way, but will confine its efforts to combatting venereal diseases, tuberculosis, and other evils which are nation wide. Smallpox and other epidemics will continue to be dealt with provincially he stated.

MEDICAL COLLEGES

THE results of the examination of the Ontario College of Physicians and Surgeons have been announced and eleven graduates of the Western University Medical School are included in the list of successful candidates. The record for the Western School this year is considered very good.

AT the eighth annual convocation of the University of Saskatchewan, Saskatoon, nine students received certificates in pharm-

acy. The prize in Materia Medica was awarded to A. Logan; in Pharmacy, to G. L. Baal; in Chemistry to C. B. Staples.

The following degrees and prizes in Medicine have been awarded by the Senate of Queen's University: Degrees of M.D., C.M.: W. E. Berry, M.B., Dundas; W. S. T. Ronnell, Kingston; G. S. Cronk, M.B., Parham; J. B. Gallighan, M.B., Eganville. This makes a total of sixty-seven M.D., C.M. degrees for the past session of the Medical College, sixty-three students having graduated last January as the result of a special war session during the winter. The prize winners were: Faculty prizes, first year: J. H. Orr, Kingston, and A. R. Richards (equal). Fourth year: G. H. Ettinger, B.A., Kingston. The Cook Scholarship: C. M. Emon, Ottawa. The New York Alunmni Association scholarship: A. Clifford Baden, Kingston. The N. F. Depuis scholarship: J. E. L. Imbleu, Renfrew. The Dean scholarship, C. M. Carruthers, Sarnia.

On June 23rd, McGill University held its annual convocation for conferring degrees in medicine. Sixty-two men received the degrees of M.D., C.M.; three men received B.A. degrees in the double course of art and medicine, and three received B.Sc. degrees in the double course of art and medicine. The prize winners were: Holmes Gold Medal, P. M. H. Savory. Final Prize, P. L. Backus. Wood Gold Medal, W. W. Read.

ARMY MEDICAL SERVICES

Colonel Perry G. Goldsmith has been appointed a commander of the Order of the British Empire. He went overseas with the first Canadian contingent and later was transferred to France as a specialist in a British hospital. In August, 1917, he was mentioned in despatches and, was later appointed president of the Standing Medical Board on England.

Lieutenant-Colonel E. Cooper Cole has been made an Officer of the Order of the British Empire. He went overseas with the Canadian Army Medical Corps in 1914. He was wounded in France and invalided home in 1916. Upon recovery he was given a position on the London Medical Board, subsequently being transferred to Bramshott Hospital. He is now O.C. at the Whitby Hospital.

The Royal Red Cross has been award to Miss Isabel Thomas, V.A.D. graduate of Toronto University, 1912, for work in England

and France during the past three years. She was mentioned in despatches by Sir Douglas Haig.

Dr. E. T. Adams, of Toronto, who served in France with the Sanitary Corps of the Canadian Army for more than two years, has been appointed Medical Officer of Health for Windsor district, a position recently created by special act of the Legislature.

The Military Medal has been awarded to G. Grigg, C.A.M.C.

Warm appreciation is expressed in England for the presentation of two Canadian Red Cross hospitals at Bushey and Taplow. The gift happily coincides with the appointment of the first British Minister of Health. Bushey Hospital was presented to the King, who intends to hand it over to the London County Council, which as administrative authority of Greater London is responsible for an area of one hundred and seventeen square miles. The intention is to devote the hospital to the use of London's children to the number of six hundred thousands on the following plan: Out of every hundred the health authorities will select the child who is the worst nourished and most debilitated. Each of these will be sent to Bushey for a month. A medical staff and nurses will be maintained, likewise a staff of school teachers, so that the children's studies need not be interrupted. Whenever the weather permits lessons will be conducted out of doors. It is estimated that the scheme will embrace, during the course of the year, upwards of three thousand poor London children.

Appointments:—Captain Gilbert Harry Lansdown, is posted for duty under the A.D.M.S., military district No. 10.

Acting Major Frederick William Lees, M.C., is posted for duty under the A.D.M.S., military district No. 11.

Major Howard Brown Jeffs is appointed A.D.M.S., Embarkation, vice Lieutenant-Colonel R. W. Ker.

Captain Alexander John Shilstra, is posted for duty under the A.D.M.S., military district No. 10.

Major Russell Butler Robertson, is posted for duty under the A.D.M.S., military district No. 11.

Captain Robert Dewar MacKenzie, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Captain Joseph Townsend Stirling, is posted for duty under the A.D.M.S., military district No. 10.

Major Albert Collins, is posted for duty under the A.D.M.S., military district No. 2.

Lieutenant Irwin McMurchie Lloyd, is posted for duty under the A.D.M.S., military district No. 2.

Lieutenant-Colonel Samuel Harvey McCoy, is posted for duty in the Directorate of the D.G.M.S., Militia Headquarters, Ottawa.

Lieutenant-Colonel George Willard Treleaven, is posted for duty under the A.D.M.S., military district No. 10.

Captain William Frederick Dey, is posted for duty under the A.D.M.S., military district No. 10.

Captain Albert Ernest Walkey, is posted for duty under the A.D.M.S., military district No. 2.

Major Stanley Gordon Chown, is posted for duty under the A.D.S.M., military district No. 10.

Captain James Everett Barry, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Captain Belleden Seymour Hutcheson, V.C., M.C., is posted for duty under the A.D.M.S., military district No. 2.

Captain John Donald Langham, is posted under the A.D.M.S., Embarkation.

Lieutenant-Colonel David Alexander Whitton, is posted for duty under the A.D.M.S., military district No. 2.

Captain George Alexander Smith, M.C., is posted for duty under the A.D.M.S., Military district No. 2.

Lieutenant-Colonel Alexander J. MacKenzie, is posted for duty under the A.D.M.S., military district No. 2.

Major George Garnet Greer, M.C., is detailed to perform the duties of Deputy Assistant Director of Medical Services, military district No. 3, vice Captain R. B. Richardson.

Major Edwin Lloyd Warner, is detailed to perform the duties of Assistant Director of Medical Services, military district No. 10.

Major George William Ogilvie Dowsley, is posted for duty under the A.D.M.S., military district No. 2.

Captain William Wray, is posted for duty under the A.D.M.S., military district No. 6.

Captain Theodore Augustus Carpenter, is posted for duty under the A.D.M.S., military district No. 2.

Promotions:—Major John Campbell, to be a Lieutenant-Colonel.

Major William Bernard MacDermott, to be a Lieutenant-Colonel.

Returned from Overseas:—The undermentioned officers are returned from overseas on general demoblization, further duty, etc: Captain Wakefield, Captain Charles DeLac Des Brisay, Captain John Taylor Lewis, Major Thomas Herbert Bell, Lieutenant-Colonel Edwin Seaborn, Lieutenant-Colonel Wm. A. Gordon Bauld, Captain Edwin Thomas French, Acting-Major James Stewart Hudson, Major Henry Andrew Gordon, Lieutenant Brockman Rand Drake, Major Lewis Lawrence Redford, Acting-Major Thos. Wellington Sutherland, Lieutenant-Colonel John Andrew Amyot, Lieutenant-Colonel Ernest R. Brown, Lieutenant-Colonel Frank Hamilton Mewburn, O.B.E., Colonel George Joseph Boyce, D.S.O., Lieutenant-Colonel F. W. Wilson, Major George Stewart Cameron, Major Findlay Stephens, Captain William Wallace Birdsall, Captain William Begg, Major Francis James Donevan, Captain Austin Bryce Simes, Major William Charles Laidlaw, Captain William Charles Pratt, Lieutenant-Colonel Wm. Harold Kerr Anderson, Colonel John Stewart, Captain David Campbell Aikenhead, Colonel George D. Farmer, Captain John Henry Conklin, Major William Lorne Hutton, Captain Charles Clarke Ballantyne, Captain Gordon Lothian Campbell, Captain William Donovan Ferrie, Captain Thomas Jones Scobie, Captain John St. Clair MacKay, Captain Peter Francis McClure, Captain Arthur McAmmond Blakely, Captain Bennie Cahanna, Major Albert Pollard Chown, Captain Joseph Romeo Pare, Captain Wilfred Marlow Ecclestone, Captain Joseph Gordon Sutherland, Captain John Angus Davies, Captain Tillman Alfred Briggs, M.C., Colonel R. H. MacDonald, M.C., Lieutenant-Colonel George Graham Corbett, Major Frank Ernest Pettman, Captain James Duncan MacDonald, Captain George Samuel Sadler, Major Albert Geogre Nicholls, Major Oliver Sayles Waugh, Captain Giles Brown Murphy.

Medical Societies

ALBERTA MEDICAL ASSOCIATION

The fourteenth annual meeting of the Alberta Medical Association will be held in Calgary on September 1st, 2nd, and 3rd, under the Presidency of Dr. R. G. Revell of Edmonton. Any physicians in Canada who wish to contribute a paper to this merting, should write the Secretary, Dr. A. Fisher, General Hospital, Calgary.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. S. Grondin, Quebec. President-elect—Dr. R. E. McKechnie, Vancouver. Acting Secretary-treasurer—Dr. J. W. Scane, 836 University Street, Montreal.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. E. E. King. Secretary—Dr. F. C. Harrison. Treasurer—Dr. J. H. McConnell.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. G. A. Anderson, Calgary Secretary-treasurer—Dr. A. Fisher, Calgary.
Annual Meeting, Calgary, 1919.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett A.M.C., Ottawa.

ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA—President—Dr. George E. DeWitt, Wolfville. Secretary—Dr. W. H. Hattie, Halifax.

BRANT COUNTY MEDICAL SOCIETY:—President—Dr. E. R. Secord, Brantford. Secretary—Dr. M. N. Faris.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. I. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

CALGARY MEDICAL ASSOCIATION—President—Dr. W. J. Shipley. Secretary—Dr. J. V. Follett. Treasurer—Dr. W. Hackey.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. A. Machado, Ottawa. Secretary—Dr. George D. Porter, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. M. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. J. W. Hattie, Halifax, Nova Scotia. Secretary—Dr. R. D. Defries, Toronto.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

DUFFERIN MEDICAL SOCIETY:—President—Dr. Rooney, Orangeville. Secretary—Dr. Smith, Shelburne.

EDMONTON ACADEMY OF MEDICINE:—President—Dr. J. A. McPherson. Secretary-treasurer—Dr. T. H. Prust. Library, Civic Block.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. F. F. McEwen Aylmer. Secretary-treasurer—Dr. W. F. Cornett, St. Thomas.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

GUELPH MEDICAL ASSOCIATION:—President—A. T. Hobbs. Secretary—J Lindsay.

HALDIMAND COUNTY MEDICAL ASSOCIATION:—President—Dr. Hopkins Dunnville. Secretary—Dr. Courley, Cayuga, Ont.

HALIFAX MEDICAL SOCIETY:—President—Dr. John Cameron. Secretary-treasurer—Dr. Hugh Schwartz.

Medical Societies—*Continued*

HAMILTON MEDICAL SOCIETY:—President—Dr. R. Y. Parry. Corresponding Secretary—Dr. Fred Harper. Treasurer—Dr. T. W. Blanchard.

HURON MEDICAL ASSOCIATION:—President—Dr. Machell. Secretary—Dr. Hunter, Goderich, Ont.

KINGSTON AND FRONTENAC MEDICAL SOCIETY:—President—Dr. H. A. Boyce. Treasurer—Dr. H. E. Day, Secretary—Dr. W. T. Connell, Kingston.

LAMBTON COUNTY MEDICAL ASSOCIATION:—President—Dr. J. E. Kidd, Wyoming. Secretary-treasurer—Dr. A. R. McMillan, Sarnia.

LEEDS AND GRENVILLE MEDICAL SOCIETY:—President—Dr. Featherston, Prescott. Secretary-treasurer—Dr. G. C. Kidd, Brockville.

LONDON MEDICAL ASSOCIATION:—President—Dr. E. Spence. Secretary-treasurer—Dr. C. A. Harris.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. J. W. Smith, Liverpool. Secretary—Dr. L. T. W. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. G. D. Shortreed, Grandview. Secretary—Dr. Hugh MacKay, 220 McIntyre Blk., Winnipeg. Treasurer—T. Glen Hamilton, Winnipeg.

MEDICAL OFFICERS OF HEALTH FOR COUNTIES OF LINCOLN AND WELLAND:—President—Dr. King, St. Catharines. Secretary-treasurer—Dr. Howell, Welland.

MEDICAL SOCIETY OF NOVA SCOTIA:—President—S. H. Murphy, Halifax. Secretary-treasurer—Dr. J. R. Corston, Halifax. Annual Meeting, Antigonishe, 1919.

MEDICINE HAT MEDICAL SOCIETY:—President—Dr. W. H. Macdonald. Vice-President—Dr. C. E. Smyth. Secretary-treasurer—Dr. J. S. Macleod.

MIDDLESEX COUNTY MEDICAL ASSOCIATION:—President—Dr. A. S. Thompson, Strathroy, Ontario. Secretary-Treasurer—Dr. W. H. Woods, Mount Bridges, Ontario.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. W. G. Reilly. Secretary—S. H. McKee. Treasurer—Dr. D. Grant Campbell.

MOOSE JAW MEDICAL SOCIETY:—President—Dr. J. M. Hourigan. Secretary-treasurer—Dr. J. Bloomer.

NEW BRUNSWICK MEDICAL SOCIETY:—President—Dr. G. G. Melvin, Fredericton. Secretary—Dr. C. J. Venoit, Bathurst. Treasurer—Dr. J. D. Lawson, St. Stephen.

NORTH-WESTERN MANITOBA MEDICAL ASSOCIATION:—President, Dr. F. A. Smith, Birtle. Secretary-treasurer—Dr. Tisdale, Kenton.

NORTH WATERLOO MEDICAL ASSOCIATION:—President—Dr. F. H. Kalbfleisch. Secretary—Dr. J. E. Hett, Kitchener. Treasurer—Dr. T. H. Callahan.

NIAGARA DISTRICT MEDICAL ASSOCIATION:—President—Dr. E. T. Kellam, Niagara Falls. Secretary—Dr. G. M. Davis, Welland.

NORTHUMBERLAND COUNTY MEDICAL SOCIETY:—President—Dr. McKenzie, Loggieville, N.S. Secretary-treasurer—Dr. Hayes, Nelson, N.S.

ONTARIO HEALTH OFFICERS' ASSOCIATION:—President—Dr. H. W. Hill London, Ontario. Secretary—Dr. J. W. S. McCullough, Toronto.

ONTARIO MEDICAL ASSOCIATION:—President—Dr. F. W. Marlow, Toronto. Honorary-Treasurer—Dr. G. S. Cameron, Peterborough. General Secretary—Dr. T. C. Routley, 66 Bond St. Assistant Secretary—Dr. F. C. Harrison, Toronto.

Medical Societies—*Continued*

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. A. T. Shillington. Secretary—Dr. J. A. Dobbie Treasurer—Dr. R. E. Valin.

OXFORD COUNTY MEDICAL ASSOCIATION:—President—Dr. J. W. Counter, Ingersoll. Secretary-Treasurer—Dr. G. M. Brodie, Woodstock, Ontario.

PERTH COUNTY MEDICAL ASSOCIATION:—President—Dr. P. F. Quinlan, Stratford. Secretary-treasurer—Dr. F. J. R. Forster, Stratford, Ontario.

PETERBOROUGH MEDICAL SOCIETY:—President—Dr. N. D. Buchanan, Secretary—Dr. G. Stewart Cameron. Treasurer—Dr. J. Malcolm McCulloch.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Dr. C. S. Elliott, Stellarton. Secretary—Dr. John Bell, New Glasgow.

PRINCE EDWARD ISLAND MEDICAL SOCIETY:—President—Dr. G. F. Dewar, Charlottetown. Secretary—Dr. Yeo, Charlottetown. Treasurer—Dr. W. J. MacMillan, Charlottetown.

REGINA MEDICAL SOCIETY:—President—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

ST. THOMAS MEDICAL ASSOCIATION:—President—Dr. G. A. Shannon. Secretary—R. W. Gliddon. Treasurer—C. R. MacKenzie.

SANITARY SERVICES OF THE PROVINCE OF QUEBEC:—President—Dr. A. Simard, Quebec. Secretary—Dr. J. A. Beaudouin, Lachine.

SASKATCHEWAN MEDICAL ASSOCIATION:—President—Dr. J. V. Cornell, Secretary—Dr. J. W. Turnbull, Regina.

SASKATCHEWAN ANTI-TUBERCULOSIS LEAGUE—President—Mr. A. B. Cook. Hon.-Secretary—Dr. M. M. Seymour, Commissioner of Health, Regina.

SASKATOON MEDICAL ASSOCIATION:—President — Dr. W. A. Cluff. Secretary—Dr. A F. Malloy.

SIMCOE COUNTY MEDICAL ASSOCIATION:—President—Dr. T. J. Johnston, Midland. Secretary-treasurer—Dr. H. T. Arnall, Barrie.

SOCIÉTÉ MÉDICALE DE MONTRÉAL:—President—M. B. G. Bourgeois, Secretary—H. M. Aubry, 323 Sherbrooke Street East, Montreal.

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LAENNEC—ONE HUNDRED YEARS AFTER

ADDRESS IN MEDICINE

By William S. Thayer, M.D.

Baltimore

AT the outset, let me tell you how deeply I appreciate the honour that you have done me in inviting me to address you—with what happiness and satisfaction I appear before an audience of Canadians. That broader sense of patriotism which links us all to the Mother Country which is as much mine as yours, has suffered much in the five years that have passed. But despite the noisy discord of ephemeral politics, that which has happened has, I think, drawn closer about us the bonds of a common ideal and a common inheritance which we cannot and would not escape; and the aureole that to-day surrounds Canada in the eyes of every American who deserves the name, can never fade.

"μέγα δὲ μέρος ἡγεῦαι τῆς τέχνης εἶναι τὸ δύνασθαι σκοπεῖν"

"The power to explore is to my mind a great part of the art."

—Hippocr. epid. III.

These words appear on the title page of Laennec's "*Traité d'auscultation mediate*," which appeared just an hundred years ago. It is fitting for more reasons than one that we pause on this notable anniversary and consider, for a moment, the man and his work, for there are lessons therein which we may well take to heart. Réné-Théophile-Hyacinthe Laennec was born on the 17th of February, 1781, in a stone house which fronted on the charming quai that

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Delivered before the Canadian Medical Association, Quebec, June 26th, 1919.

borders the little port of Quimper in the Department of Finisterre in Bretagne.

His father, Théophile-Marie Laennec, was a light and airy personage—a lawyer by profession, a courtier by nature, a furious framer of mediocre verse, through which he curried favour with the great and the fair, an indefatigable office-seeker, a prolific professor of lofty and exemplary sentiments and advice of which he himself was a sufficiently poor exemplar; a futile but withal an entertaining person—a singularly anomalous and ill-chosen father, however, for a serious and distinguished son.

Laennec had two uncles, one, Michel, a prelate, who died an émigré; the other, Guillaume-François Laennec de la Renardais, a physician of Nantes, to whom Laennec owed much. His mother, Michelle Gabrielle Félicité Guesdon, of Quimper, of whom little is known, was an Angevine by descent, and came from a family of some literary distinction; she died five years after his birth.

After his mother's death, Théophile was sent with his brother by his happy-go-lucky father first to his uncle Michel at Elliant, and a year later, on the latter's removal to Tréguier, to his uncle Guillaume at Nantes. Guillaume Laennec was a fine and sturdy character, a graduate in medicine at Montpellier, who had studied previously in Paris, and with John Hunter in London. He was at this time rector of the University of Nantes. The two boys were taken into his house and cared for as members of his own family. For Théophile especially his uncle grew to have a deep and lasting affection, which was manifested throughout his life. Laennec's early instruction was gained at *L'Institut Tardivel* and the *Collège de l'Oratoire*, which, for the year '91-'92, was under the vigorous direction of no less a personage than le P. Fouché de Rougerolles, then on the threshold of his eventful career. In August, '92, he gained the accessits of two prizes of honour, and a first prize in composition—French translation.

At this time, to the dismay of his uncle, Théophile was already writing verse. In these days when the air is rent with protests at the burden and the waste of time involved in the acquisition of a smattering of Latin by our boys who are to pursue a career requiring knowledge of the natural sciences, it is not uninteresting to read (Rouxeau) a charming metrical translation of the first eclogue of Virgil, written by a boy under twelve years of age.

But rhyming was not his only distraction; he appears to have been a boy in every sense.

The Revolution followed its course. The guillotine was set

up in the square under the Laennecs' very windows. Uncle Guillaume became a surgeon in the army. But Théophile tranquilly pursued his studies, and graduated in 1795. At about this time, his father married for a second time, Geneviève-Alice-Julie Urvoy de St. Bédan, the widow of an émigré. Renouncing the temptation to which he almost surrendered, to join the engineers, Théophile began the study of medicine at *L'Hôtel Dieu* of Nantes.

Here, actively engaged in the lesser duties of military surgery, he became deeply interested in natural history in all forms, roaming about the country and devoting himself to his collections. He had also developed an enthusiasm for Greek, to which he gave special attention. Alert, active, ambitious, he was filled with the desire to perfect himself in various arts and graces, such as riding, dancing, music—studies, the pursuit of which was difficult with the scant means afforded by his scatter-brained parent.

In 1798, he passed through a severe illness, which may well have been a typhoid fever.

In the insurrection of 1800, Théophile took part in the military expedition of General Grigny in le Morbihan. While stationed at Vannes and at Redon, he composed a long poem, humorously describing the expedition. This was supposed to be the product of an ancient Celtic bard, Cardoe, translated after years of effort, by its discoverer, Cenneal (Laennec), and was entitled "*La Guerre des Venêtes.*" On his return, Laennec entered the military hospital as an army surgeon of the third class.

At this time his uncle had long been struggling to induce the recalcitrant father to supply the funds necessary to enable the boy to pursue his studies in Paris, but it was not until April, 1801, that Théophile joined his brother "Michaud" at 947 rue St. Dominique d'Enfer, and entered the *Ecole spéciale de Santé*, as the *Ecole de Médecine* was then known. The two main schools of clinical medicine in those days were that of Corvisart at the Unité (Charité) and that of Pinel at the Salpêtrière. Under Corvisart, Laennec began his studies. It was a fortunate choice. Corvisart had a well-organized clinic where (Rouxeau) "each morning in groups the students were trained in the examination of patients, while the observation was completed wherever it was possible, by those careful and methodical necroscopical examinations, the taste for which Corvisart contributed so much toward spreading in France." Here Théophile found himself thrown with Bayle, for whom he developed early a warm attachment.

From the outset, Laennec was a marked student, and was soon

made a member of the *Société d'instruction médicale.* At twenty he was an accomplished student of English, German, Latin and Greek, and beside following the clinic at the Charité, and the last inspiring course of Bichât, on pathological anatomy, he found time to attempt to perfect his Greek at the *Ecole Centrale des Quatre Nations.* In 1801, he was also admitted to the *Ecole pratique,* where he studied under Duméril, Chaussier, Fourcroy, Deyeux, Hallé, Pinel, Bourdier, Peyrilhe, Richard, LeClerc, and Cabanis. He also worked with Dupuytren, in his studies in pathological anatomy.

From the outset Laennec kept careful and detailed notes of all his observations and lessons, and among his papers is an interesting shorthand record of the celebrated debate in connection with Bayle's inaugural thesis.

His first medical communication was published in the *Journal de médecine de chirurgie et de pharmacologie*" for June, 1802, entitled, "*Observation sur une maladie du cœur, ossification de la valvule mitrale, dilatation du ventricule droit, avec affection de la poumon et du plêvre gauche.*" A month or two later, Laennec published an analysis of Bell's work on gonorrhœa and venereal disease, and in the same year, an account of a group of cases of peritonitis. This last publication marks an epoch in medical history, setting forth clearly and sharply the clinical and anatomical features of the disease touched upon by Bichât, but as yet unrecognized clinically. This remarkable work was the beginning of a series of contributions, anatomical and clinical, which have been equalled by few men in the annals of medicine.

At the time his labours were especially devoted to the study of normal and pathological anatomy. In association with Bayle, he began to work with Dupuytren on his treatise of pathological anatomy—work which was soon to be broken off, owing to misunderstandings with the former. From this time on his publications were frequent and important. In February, 1903, there appeared a "*Note sur une capsule synoviale située entre l'apophyse acromion et l'humérus*", the discovery and accurate description of the subdeltoid bursa, the surgical importance of which has been recognized in such recent days.

A little after this he described the fibrous capsule of various abdominal organs, especially that of the liver, which was as yet unknown as distinct from the peritoneum. In the distribution of prizes to the "*Ecoles spéciales de Paris,*" in September, 1803, Laennec obtained the first prize in surgery, and shared the first prize in

medicine with Billerey. Later, at the *Concours* of the *Ecole pratique*, the announcement of his candidacy had so disturbing an effect in preventing others from coming forward, that at the special request of his instructors, he withdrew his name, and took a position "*hors de concours*". Already his success was so great that he started a small course in pathological anatomy on his own account, and determined to write a treatise upon the subject.

A member, at its inception, of the *Société anatomique*, he was a constant contributor, his most important communication being his "*Mémoire sur les vers vésiculaires*," etc.

As ever, the careless father was negligent in providing for the industrious son, and Laennec's work was associated with constant worry as to matters of finance. But finally, in 1804, he was able to pass his examinations and present his thesis, which was entitled, "*Propositions sur la doctrine d'Hippocrate rélativement à la médecine pratique.*" In this interesting document, Laennec showed his familiarity with the Hippocratic writings, which, happy man, he read more or less fluently in the original. The thesis is replete with wise observations. He begins with the quotation: "Medicine is not a new science. For a long time its principles have been established and its path traced. By following these through long years, many valuable and useful discoveries have been made, and every one who, endowed with the necessary qualities, knowing that which has been done before him, starts from this point and follows the same route, will make new contributions. But he who rejects the work of his predecessors and disdaining all, pursues his studies by another route, and with another point of view, and thinks he has found something, he deceives himself and deceives others."

He points out the necessity of the proper classification of disease on a basis of pathological anatomy, of the vital importance of the study of diagnosis by careful observation and correlation, not only of the general symptoms on which prognosis depends, but of the special symptoms associated with each disease process. "The only method by which one can acquire solid knowledge in medicine depends on avoiding the adoption of any principle which is not proven by many individual facts, by studying with care the characters and the course of diseases, and by treating them according to the indications drawn from the observation of that which has succeeded in like cases. This is the method which Hippocrates asserts to have been known long before him, which he regards as the only way by which one may make real discoveries."

He ends with the words of Klein (*Interpres Clinicus*): "I

assert that medicine is free. I place myself neither with the ancients nor the moderns, and I follow the one (party) as well as the other when they cultivate the truth; yet more often, I repeat, myself, their observations." Wise advice for the day in which it was written, wise, if not taken too literally, for all time.

Théophile Laennec had already won the recognition of his masters and associates. He was made a member of the *Société de l'école de médicine* and became an editor of the *Journal de médecine*, etc. He took up the torch from the hands of the dying Bichât, and his studies of pathological anatomy were worthy of his great predecessor. The work on peritonitis was a classic both anatomically and clinically. In 1805 he published a note on pathological anatomy in which he sought to set forth a system of classification of organic changes—an interesting and valuable communication which led to a long dispute with Dupuytren. At about this time he came chiefly interested in the study of the Celtic dialect of lower Brittany, of which eventually he acquired a considerable knowledge. He published frequent critical reviews and an annual summary of the diseases prevailing in Paris—a duty which brought him into close touch with the Hôtel-Dieu and the St. Louis, as well as the Charité. But already his hard work had told upon him seriously. That which he called his "asthma" disturbed him greatly, and the rest he needed he could not take. A happy vacation of several weeks in 1805 with his cousin, Madame de Pompery, at Courcelles, near Soissons, did much to freshen and strengthen him. Rouxeau publishes a number of amusing verses and extracts from plays which Théophile seems to have written during this short vacation with surprising facility and spontaneity.

In 1808, Laennec retired from the *Journal de médicine*. He was beginning to acquire a practice of his own.

In 1809, the *Ecole de santé de Paris* became the *Faculté de médecine;* Laennec was a doctor of the new school.

In 1812, he was named Alternate Physician "médecin suppléant") at the Beaujon.

In 1814, he was at the Salpêtrière, where his knowledge of Gaelic was of the greatest help to him in caring for and consoling the young Breton conscripts, who, unable to make themselves, understood, were distressingly homesick.

He had become the great authority on pathological anatomy, and in the *Dictionnaire des sciences médicales*, he wrote on "*Anatomie pathologique, Ascarides, Cartilages accidentels, Crinon, Cucurbitains, Dégénération, Dégénérescence, Désorganization, Ditrachyséros ou*

bichorne rudy, Encéphaloïde, Fibreux, Fibro-cartilages accidentels, Filaire, Furie infernale."

In 1816, Laennec was appointed Chief of Service at the Neckar, where he gathered about the bed-side a group of devoted students. It was here at the Neckar that his great discovery was made. Every one knows the story; how one day in 1816 he noticed boys at play in a court of the Louvre who, with the ear applied at the extremities of long pieces of wood, listened to the transmission of the sound of a pin scratch at the opposite end, how, on the following day, he rolled a notebook tightly, and placing one end against the chest of a patient, was delighted to find that he could hear the heart beats more clearly and distinctly than he had been able to hear them with the naked ear. Soon he devised his simple wooden cylinder and began his researches. It was, after all, a natural step. Up to the time of Bichât and Laennec, despite the work of Morgagni, little had been known of the pathological changes in organs. Laennec, a great observer, inbued with his new knowledge of pathological anatomy, had his eyes wide open for something more than that which percussion and inspection and mensuration could give; and the acute mind found the way.

What Laennec did with his discovery is a model for all time. In the three years that followed, he had brought before the world the characters of normal respiration and voice sounds, and their variations, with different physical changes in the constitution of the lungs as clearly as they may be taught to-day. But more than this, he had described anatomically and clinically the various forms of bronchiectasis, emphysema, pulmonary œdema and pulmonary apoplexy.

The description of pneumonia from an anatomical standpoint is almost as admirable as the demonstration of the method by which its presence could be determined clinically. Again, his description of the different forms of pulmonary tuberculosis, in ward and laboratory, the recognition of the possibility and manner of arrest of the disease, are models of acute observation and understanding. His contributions to the diagnosis of diseases of the heart are not upon the same plane, owing, doubtless, as Saintignon points out, to the circumstance that the physiological explanation of the heart sounds and their significance was at that time unknown. Starting with the false hypothesis that the second sound was auricular in origin, he never found his way out of the jungle.

This was a wonderful work for one man. How was it done? Laennec tells in his own words in the preface to his book: "When

a patient enters the hospital, a student is given the task of collecting from him what anamnestic information he can give as to his disease and of following its course. As I examine the patient myself, I dictate the principal symptoms that I observe, those, especially, which may go to establish the diagnosis or the indications as to treatment, and I give my conclusions, subject to amendment, if it be necessary, by later observations. This dictation, which is made in Latin for obvious reasons, is taken down by the pupil in charge of the patient, and, at the same time, on a separate notebook, which I call the "diagnostic sheet, which it is the special duty of another pupil to keep in order that he may hold and read it to me, if necessary, at each visit. When any new sign appears, such as may modify the first diagnosis, I add it also. If the patient dies, the protocol of the necropsy is taken by the pupil in charge of the observation. I re-read these observations before all those present at the necropsy, and if there be occasion to make any correction, I do it on the spot, and after having taken their counsel."

Laennec's visits, according to one of his pupils, Toulmouche, lasted from an hour to an hour and a half. He invited his colleagues and friends to interesting necropsies, and he always committed himself before the necropsy in the presence of all as to the changes which he expected to find. There could be no better model for study and instruction.

In May, 1818, Laennec spoke before the *Société dé l'école* on auscultation, and finally, in August, 1819, just a hundred years ago, the famous "*Traité d'auscultation médiate*" appeared. It made a great impression, and although seriously criticized by some, it was soon taken up by the world.

Laennec was small and delicate of frame. "Little Laennec," "the little Professor," his fiery adversary, Broussais, called him. But he was spirited and devoted to outdoor sports, especially to hunting, for which some of his rich patients gave him opportunities on their estates. During the winter he practiced in his apartment with an air-gun. Frail as he was, he was especially proud of his prowess in athletics of all sorts. "He was but a breath of air," says Pariset, "and he thought himself a Hercules." He was musical, and played the flute. He drew fairly well, and amused himself at other times at the turner's table. But the scant recreation that he snatched from his work was of little benefit. He burned the candle at both ends, and it is probable that he was already suffering from the malady that had carried away his master, Bichât, and his companion, Bayle. He had wounded himself during a necropsy and

developed an anatomical tubercle on his finger, which persisted, Finally, in 1820, worn out, he retired definitely, he fancied, to his beloved Kerlouarnec, in Brittany, There with his faithful companion and housekeeper, afterwards to become his wife, he lived for two years by the sea. The blessed solace of solitude, the joys of hunting and roaming about his lovely native fields, the opportunities of leisure to renew his studies of the classics and of the dialect of his people, rest and peace, gradually brought new strength, and after two years, duty called him again to Paris.

On his return, he found new and wearying tasks thrust upon him in the shape of an appointment as physician to Her Royal Highness, the Duchess de Berry, and shortly afterwards as professor of the *Faculté.*

At this time, Broussais, with his so-called physiological doctrine, held considerable sway—that strange doctrine which ascribed all the vital processes to that which he called "irritation", and all diseases to its excess or deficiency—the excess meaning inflammation, the default, debility. For him there was no essential difference between diseases, which are distinguished only by the degree of irritation and the particular *sympathy* of one organ for another. The physician must occupy himself only with the organ primarily affected, which was, in most instances, the gastro-intestinal tract. The terms "*gastro-énterité*" and "*gastrite*" played a large part in the "physiological doctrine" with which Broussais believed he had revolutionized medicine. All that had gone before could be thrown aside, and treatment was reduced to the simplest terms. It was another system like that of Hahnnemann or Brown or Gall—words —championed by a convinced, fiery, spirited, vain, intolerant advocate.

In his opening lecture at the *Collège de France*, Laennec warned against the fallacies of the new "doctrine" in a clever parable of the life and work of Paracelsus. And from this time on there was war between the clinic of Val de Grace and that of the Charité, to which Laennec had moved with his new chair—war in which the acute and well-considered criticism of Laennec easily triumphed over the fiery diatribes of the modern Paracelsus. His clinic was soon sought by physicians from all countries, eager to learn his methods. In 1823 he was made a member of the Academy of Medicine.

In 1824, he married his companion, Madame Guichard-Guégen, *veuve* Argou. In the same year he was made a Knight of the Legion of Honour.

From 1824, when the first edition of his treatise was exh austed he had been working assiduously, in addition to all his other duties, on a second edition, the form of which he had entirely changed, making the work in reality a treatise on the diseases of the heart and lungs. This was completed and published in May, 1826.

It was his last effort. The strength that he had gained in his long rest in Brittany had soon given out. His cough had increased. In April he developed fever and dyspnœa and, soon, a persistent diarrhœa. His voice grew hoarse; he became profoundly emaciated, and in June, himself unconscious of that which all others could see, he left for Kerlouarnec, where he died on August 13th. Two hours before his death, he removed his rings and laid them on the table by his bed. To the queries of his wife, he replied: "Some one else will soon have to do this for me; I would save him the trouble." He was forty-five years old.

In the ten years that had passed since his discovery of auscultation, he had brought the art of physical diagnosis of diseases of the lungs from a state of the utmost crudity almost to the point at which it remains to-day. He had done this not only through the introduction of his new method, but through the study and analysis of the changes in the organs themselves, and through the careful application to diagnosis, not only of auscultation but of all other methods then known, and by a conscientious objectivity which is a model. In his opening lecture at the Collége de France, he says that, if he presents hypotheses, "I hope to present them in such manner that one cannot attach more importance to them than do I myself, and I hope that I shall never give that which I think, that which I suppose, my point of view, my theory, in a word, for that which constitutes the true science, for *that which one knows.*"

That which Laennec had done for the lungs was later extended to the heart with the growth of our knowledge of physiology of the circulation, by Bouillaud, Hope, Stokes, Corrigan, Graves, Flint and others.

It is just one hundred years since the appearance of Laennec's book. Since then great things have happened in medicine. The advances in our knowledge of the natural sciences, the associations which attach medicine to a firm scientific basis, have increased rapidly. The developments in the domain of pathological anatomy, of bacteriology, of chemistry, of physics—to mention only the applications of electricity in exploration, and of the *x*-rays, have

given us a deeper insight into the nature of the processes of life and of disease, and have augmented our powers of control and recognition and prevention, and, happily, in some instances, our powers of relief and conquest of disease.

The refinements of diagnosis and the possibilities of treatment demand to-day an increasing mass of knowledge and experience which we struggle, often in vain, especially in the United States, to crowd into an insufficient period in our universities and schools of medicine. All the new methods of research, however clean-cut and valuable their results may be, are of use only if they are exercised by one who has mastered them by practice and experience. A new instrument of precision, a new method of surgical procedure, in the hands of the inaccurate or the inexperienced, is of no advantage; it may be misleading and harmful. Refinements of method must themselves be studied and practiced carefully. But even then they are in themselves rarely final; they are but additions to our basic armamentarium, new bricks for the edifice of diagnosis and treatment, useless if the foundation be deficient—nay, more than useless—dangerous. In the domain of diagnosis, the simple procedures of Auenbrugger and Laennec remain the basic essentials of the art. No man is fit to profit by modern refinements of diagnosis who is not experienced in the study of pathological anatomy, familiar with the changes in organs, and well trained in the fundamental methods of physical exploration, who has not gained through practice at the bed-side a skill and experience in the art of auscultation and percussion which has made him familiar with the physical manifestations of the activities of heart and lungs in health and in disease. How variable these manifestations may be in the normal subject should be known by all physicians.

"The power to explore is to my mind a great part of the art."

This familiarity, this training, this power, is to be gained only in the necropsy room and in the ward. Books cannot teach it; it cannot be learned in the lecture-room; no magic power of inheritance can transmit it. "There are," says Laennec, "some things which one can transmit well only by experience and practice; . . . however, it is precisely in these points that I count on training the students at the clinic; such are the distinctions of the various nuances of crepitant, dry and moist râles, the (distinction of) deep and superficial phenomena, . . . of the manner in which, in the most difficult and uncertain cases, in pericarditis, for example, one arrives at a definite diagnosis through comparison of the signs and by a process of exclusion."

The experiences of the last few years have made it painfully clear that a very large proportion of our American physicians, and I understand that, to a certain extent, the same is true in this country, are sadly lacking in the essential foundations of a training in diagnostic methods. In the army there is apparent a widespread tendency to reason and act precipitately and without control on information furnished by the laboratory. Physicians forget that laboratory reports are in few instances final, that their value depends in great measure on their relation to the clinical aspects of the situation—that at every point the human element comes into play, that a laboratory report from an unreliable source is worse than worthless.

It is becoming easier and easier for the physician to obtain *x*-ray plates or fluoroscopic examinations of his patients, examinations of sputa and excreta, cultures, agglutination and complement deviation tests, which come back to him as short and definite reports. Too often the *x*-ray report especially, is written so as to convey to the practitioner a sense of finality which is generally unjustified. To the physician who is not wholly familiar with the clinical aspects of the case, this is a danger—a trap into which he falls in too many instances. To him who is incapable of controlling it, an *x*-ray report is often a liability rather than a help. In the army in France the greater part of the unjustifiable diagnoses of pulmonary tuberculosis were dependent upon the blind acceptance of an *x*-ray report. The same is true in connection with many laboratory tests. I have seen the most obvious ulcerative endocarditis regarded and treated as typhoid fever because of the report from a health department of a positive typhoid agglutination test.

It is, alas, too common in private practice to meet with men who have almost abandoned the examination of the patient, and depend on the reports of consulting specialists and on laboratory tests. Not long ago, as I told my students this spring, I saw in consultation, a gentleman who was said by his physician to be suffering from cardiac disease; he feared, angina pectoris. I asked the physician what the symptoms had been. His reply was that at first *he* had thought that the patient had indigestion, but that Dr. X. had found his heart enlarged, that Dr. Y. had made a Wassermann reaction which was negative, that Dr. Somebody Else had looked into the conditions of the stomach and given the patient a test breakfast without notable result, that a differential blood-count had been made; that the urine showed no abnormalities. I asked if the patient had had pain. He had, over the heart. Did

it radiate into any other part of the body? No. Was it associated with exercise? He thought not. After a little questioning, I realized that the doctor had practically no information to give me as to the symptoms or physical signs manifested by the patient. I then spoke with the patient, and in a few minutes learned that his pains did follow exercise and eating; that they did radiate into his arms in a characteristic manner; that the history alone was such as to justify a diagnosis of angina pectoris The doctor had neglected all ordinary methods of investigation and had contented himself wholly with the reports of laboratories and experts on this, that, and the other detail. This is not to practice medicine. But, though a rather exaggerated picture, it is an example of what one met too often among younger as well as older officers in our hastily gathered together medical corps.

In one ward of one of our army hospitals in America during an epidemic of pneumonia, the Chief of Service discovered thirteen unrecognized empyemas among thirty-two patients. One hundred years after the publication of Laennec's book, the commonest event of my visits to camp hospitals in France was the discovery of unrecognized pleural effusion, pleurisy regarded as unresolved pneumonia.

Who is to blame for such conditions as this? Is it that the men who enter medicine to-day are incapable of acquiring the foundations of the art? I think not. On the contrary, in those hospitals in the United States Army where courses of instruction were instituted, it was surprising to find the avidity with which medical officers, young and old, grasped the opportunities offered, and how quickly some acquired proficiency in methods of physical examination, which, in the medical school, they had not properly been taught.

The fault lies in our methods of medical instruction, and here again I fancy that you, in Canada, have been less at fault than we. Nevertheless, I am disposed to believe that the general interest in bacteriological, serological, chemical, and the newer physical methods of exploration have in many schools led us to forget the necessity of prolonged and systematic training in laboratory, ward, and out-patient department, in pathological anatomy and in physical diagnosis in its more restricted sense, in auscultation and percussion. Training in diagnostic methods is useless if it be not preceded and accompanied by experience in the dead house. The student must be familiar with the anatomical changes in organs which he seeks to recognize in the living subject. He must follow the patient from the ward to the necropsy table. More than this, proper instruction

in auscultation and percussion demands careful supervision of the student—instruction in small groups. The student must be led to make his own discoveries, to solve his own problems—he must be directed to a proper course of reasoning. Physical diagnosis can be taught only by the bedside. Again, this early instruction in physical diagnosis should not be relegated wholly to the young instructors. One of the most important duties of the professor of medicine is to give his personal attention to the students who are for the first time approaching the patient. It is at this point in the career of the student that the wise and experienced clinician can exercise his most important and lasting influence. It is, I believe, the attempt to teach the diagnostic art didactically that is at the root of the inefficiency of so many practitioners to-day. If, at the outset, the student be encouraged to read books or to listen to discourses on diagnostic methods, he starts with a handicap of preconceived ideas which he may never overcome. Again, the necessity of familiarity with the normal is too often overlooked. No student should leave the medical school without appreciating the frequency, position and character of the sounds heard so commonly on the expansion of atelectatic borders of lungs.

No man should be allowed to enter the practice of medicine who has not, by experience, made himself familiar with the auscultation of the normal heart and with those murmurs which are the rule, rather than the exception, in young individuals, especially cardio-respiratory murmurs. If he be not familiar with the normal, he will be a poor judge of the significance of deviations from the ordinary.

"The power to explore is to my mind a great part of the art."

In epitomizing the life of a great physician, I have desired to emphasize the thought that the kernel of the art of medicine lies in the power to explore. This power is gained only by experience and by practice.

The last century has perfected the art of diagnosis in many ways. But proficiency in the basic methods of exploration which we owe to Auenbrugger and to Laennec is as vital to-day as it was an hundred years ago.

In those parts of this paper which deal with the life of Laennec, the author has drawn largely on the works of Saintignon (Saintignon, Dr. Henri: "Laennec: Sa Vie et Son Œuvre," Paris, J. B. Baillière et Fils, 19, rue Hautefeuille, 1904), and Rouxeau (Rouxeau, Alfred: "Laennec avant 1806," Paris, 1912).

SANITATION IN WAR

ADDRESS IN PUBLIC HEALTH

By John W. S. McCullough, M.D., D.P.H.,
Lieutenant-Colonel C.A.M.C.

IN every war the soldier faces two enemies; the one is the armed forces of the foe, with their terrible engines of destruction, the other the silent and in the past the far greater foe, the grim purveyor of death, disease. The history of warfare for centuries has shown that of these two enemies the latter or silent enemy causes much the greater mortality.

War Statistics.—According to Longmore's tables, giving the statistics of war, and which are based on the records of battles for the past two hundred years, the usual story has been that four men have died from disease to every one from bullets. In the Russo-Turkish war, eighty thousand men died from disease and twenty thousand from bullets. In the Crimean campaign it is stated on eminent French authority that the Allies in six months lost fifty thousand soldiers of diseases and only two thousand from casualties. In 1894, during the French campaign in Madagascar, of fourteen thousand men sent to the front, twenty-nine were killed in action and seven thousand succumbed to disease, most of which was preventable. In the Spanish-American war, in a campaign of six weeks, the deaths from war casualties were two hundred and ninety-three and those from disease three thousand six hundred and eighty-one, or nearly fourteen to one. In the Boer war, there were seven thousand one hundred and fifty-four deaths from enteric fever alone or more than from all other casualties combined.

In comparison with the foregoing figures, it is stated on the authority of the Japanese Minister of War, that in the Russo-Japanese war, from February, 1904 to May, 1905, the total deaths from casualties and wounds were fifty-two thousand, nine hundred and forty-six, or nearly 9 per cent. of the army, while the total deaths from sickness amounted to eleven thousand, nine hundred and ninety-two, or only 2 per cent. of the forces in the field.

Read at the meeting of the Canadian Medical Association, Quebec, June 26th, 1919.

The Japanese Record in Sanitation.—In the war with China the Japanese losses from disease were far greater than from casualties. That the Japanese were able ten years later to completely reverse the record as between wounds and disease is said to be due—

(1) "To thorough preparation and organization for war;

(2) To the simpler non-irritating, easily digested ration supplied to the troops, and

(3) Because of the brilliant part played by the members of the medical profession in the application of the principles of sanitation and the prevention of communicable disease in the army."

For the purposes of preparation and organization the Japanese Government sent her students all over the world to study the army systems in vogue. From the knowledge thus gained, she developed a system of her own based upon prevention rather than treatment. The medical department was organized on broad generous lines, and its representatives given the rank and power their responsibilities merited, recognizing that they had to deal with a foe which previous history showed was responsible for 80 per cent. of the mortality. Japan's medical officers were graded as high as the officers of the line who combat an enemy who is responsible for only 20 per cent. of the mortality. At home she organized the most splendid system of hospitals that had ever been devised for the care of the sick and wounded, and with the army at the front she established the most elaborate and effective system of sanitation heretofore found in connection with any army. The Japanese were the first nation to adequately recognize the true value of an army medical corps. Her students had studied the methods of the best medical schools of western civilization. These methods were adapted to the needs of the army. They saw that, in order to make their armies effective in the field, preventable diseases must be controlled. They established institutions for the study of infectious diseases, and for the manufacture of serums and vaccines necessary in the prevention of disease. They discovered the germs of lockjaw and the plague and developed a preventive treatment for these and other affections. They recognized the value of cleanliness of the body, and every soldier went into action with a clean body and clean underclothing. They had learned the lesson which, previous to the Boer war, Britain had failed to apply, viz.: that water carries disease and should be purified by boiling. The food supplied was designed to meet climatic conditions. Wounds on the battlefield were, except in emergencies, treated only by first-aid dressings. In the Japanese army, prevention to the smallest detail was carried

out. There was the most careful supervision of rations, clothing and shelter of the units. The Japanese medical officer is omnipresent. He is with the first screen of scouts testing and labelling wells so that the army to follow shall drink no polluted water. Coming to a town there ensues a thorough examination of its sanitary condition, and, if infection is found, the premises where it exists are quarantined and placed under guard. No soldiers are billeted where danger from communicable disease is found. All fever cases have the blood examined. The fruit, food and vegetables for the army use are sampled. If the food is tainted, the fruit overripe or the water polluted, they are not allowed to be used. Obedience to the order of the medical officer is absolutely respected.

In the camps the medical officer lectures to officers and men on the details of general and personal hygiene—how to cook and to eat—when not to drink or bathe. The men are even taught how to pare and clean the finger-nails. The results are seen in the figures given—*four deaths from bullets to one from disease.*

The South African War.—The report of the Royal Commission on the South African War relating to the medical service, gives the impression as remarked by the *British Medical Journal*, "that the system, like that of the rest of the army, was based on the supposition that the grim actualities of war would never have to be faced." One medical witness put it that "the medical service was overworked, undermanned and underorderlied". The Surgeon-General was supplied with a personnel to look after sixty thousand men—not enough for even that number—but instead they had to look after two hundred and fifty thousand men besides camp followers, and the work was scattered over half a continent.

Sanitation in War.—Sanitation in war is a broad subject. It is not merely, as some seem to think, a synonym for latrines, important as these are, but it practically embraces everything involving the physical welfare of the soldier. It is because of the close attention to every detail of sanitation that the incidence of disease and the mortality of the army have been so much less in this war than in any previous one.

Sanitary Methods in C.A.M.C.—The sanitary methods followed by the Canadian Army Medical Corps were practically the same as those which were found effective by the Japanese. Competent sanitary experts were placed in charge, laboratories established, lectures instituted and all medical officers were required to pass an examination in sanitation.

As soon as possible following enlistment, every man was in-

oculated against typhoid and para-typhoid, and vaccinated against smallpox. The record of inoculation and vaccination was entered on the history sheet, and in the case of inoculation this was repeated at intervals of a year or so during the campaign. Close attention was given to the quality and quantity of food and to the sterilization of dishes and other utensils, such as drinking vessels used in common. In Canadian camps these were boiled after each meal. The canteens were closely supervised and common cups eliminated as far as possible, and if any were used, they were boiled after each using. In this way we think that the occurrence of outbreaks of communicable disease, many of which are conveyed from mouth to mouth, are prevented. Provision was made for frequent and regular bathing of the men, the blankets received daily airing, and there was provision for sterilization of blankets at regular and frequent intervals. Recognizing that impure water is a cause of diseases like typhoid, dysentery, cholera and other intestinal affections, the water-supplies received the most meticulous attention. All water used was sterilized by hypochlorite or by boiling and it was the duty of the sanitary officer to see that this order was obeyed.

The army sanitarian requires plenty of ingenuity. He has to beg material from Ordnance and the Engineers. Sometimes he will get it at once, sometimes after a long interval, and often not at all. Colonel Balfour of the R.A.M.C. tells the following story:

"A New Zealand medical unit on a certain island was in need of wood for sanitary purposes. Requisition after requisition failed. Finally the officer commanding said to his quarter-master: 'I want you to indent on Ordnance for a large supply of wood to make tombstones.' 'Tombstones!' said the quarter-master; 'what do we want with tombstones?' 'Never mind,' was the answer, 'do as I tell you."

"Next day a cart laden with wood of all shapes and sizes, made its appearance. There was plenty of wood for the dead. There was none for the living."

This war has developed many improvements in the Army Medical Corps. A much-needed addition is an affiliated body of expert sanitary engineers under its control to carry out minor sanitary works which are of the greatest importance.

Some Affections Controlled by Sanitation.—With respect to some of the more important affections with which it has been the duty of sanitarians to cope with during the war, it may be said that of these perhaps the most satisfactory results have been experienced in respect to typhoid and other forms of enteric fever.

As already pointed out, this disease had heretofore been the scourge of military campaigns the well-known experience of the South African and Spanish-American wars being the latest and most typical examples of the destructiveness of this group of affections. In the absence of the protection afforded by such sanitary measures as inoculation and by the sterilization of water supplies, by the care taken of the body excretions and in the exclusion of flies, the probability is that the domestic conditions found in the various areas of war would have produced an epidemic of typhoid and paratyphoid fevers of frightful proportions in the Allied armies. The precautions taken by the sanitary service sufficed, however, to reduce the mortality from these affections to a minimum.

Cerebro-spinal fever, otherwise known as epidemic cerebro-spinal meningitis or "spotted fever", came into prominence in the early days of the war, and Canada has the doubtful honour of being popularly supposed to have transmitted the disease with its first contingent of troops to England, but as there were two hundred and seventy-two cases with one hundred and sixty-eight deaths in England and Wales in 1912, and three hundred and four with one hundred and sixty-three deaths in 1913 and an equal number in 1914, it may be safely urged that the most the Canadians had to do with the incidence of the affection in England was to contribute to the existing condition. It has been claimed by the Medical Research Committee's report that while the Canadians did not import a new disease they did introduce a virulent strain of the causative organism and were in some degree responsible for its spread This view, however, has been vigorously controverted by Adami who points out that the strain of meningococcus obtained from the Canadian cases were identical with those isolated from purely British cases. From the same authority I quote that there were in the Canadian Expeditionary Force from 1914 to 1918, three hundred and sixty-seven cases in all with one hundred and ninety-eight deaths, a mortality of 54 per cent. In the early days of the war, when medical officers were not so conversant with the symptoms of the disease and when perhaps the crowding of barracks did not permit of such careful isolation as obtained later, the mortality was higher. Later on, close observation and prompt isolation of carriers as discovered by bacteriological examination proved effective, and in Canada at least the mortality lessened very greatly in each succeeding year of the war. There is no doubt also the combination of a larger variety of strains contributed to increase the effectiveness of the serum used in treatment. In an outbreak in any

unit the cases were promptly removed to a special ward in hospital, the contacts at once isolated and examined for carriers, and vigorous disinfectant measures used. In this way further outbreaks were effectually prevented. If the same means had been carried out in civil life, the civilian epidemics would have been much reduced and incidentally the danger to the soldier in respect to this affection materially lessened.

Tetanus or Lock-jaw, which has its cause in the fouling of wounds with soil containing manure, was a disease much to be feared in countries so intensively cultivated and so heavily impregnated with stable fertilizer as France and Belgium. The precaution of the use of iodine and first-aid dressings to all wounds, however trivial, and the prompt use of tetanus antitoxin contributed in an enormous degree to the prevention of a high rate of mortality from this affection.

Diphtheria, Scarlet Fever, Measles and Mumps, are affections likely to spread among men quartered in cities and towns who inevitably mix freely with the civil population in their homes and places of amusement. The three latter are diseases often found among young men in their teens, who have not acquired the immunity conferred by previous attacks of these diseases. The Canadian soldiers, and particularly the men of the Flying Corps, who came from all parts of Canada and from all quarters of the United States, were particularly susceptible. It was only by the most rigorous methods of isolation and quarantine, particularly during the winter of 1917 and 1918, that the proportion of cases and the mortality from these affections was kept within reasonable bounds. Diphtheria is usually observed at an early stage in the army and here is seen the effective value both in treatment and cure of anti-diphtheriaic serum. The effect of this remedy too was strikingly observed in cases of infection of wounds in returned men with an organism of a diphtheroid or of a true diphtheritic type. The mortality from diphtheria in the army was comparatively small.

Smallpox, thanks to vaccination, was practically an unknown factor in the Canadian army in Canada; I personally know of but a single case.

The results of the precautions taken against lice, rats, fleas and other vermin, by means of which trench fever, typhus, relapsing fevers, and other affections are transmitted, are striking examples of the value of sanitary measures. To a Canadian medical officer, Mayor H. Orr, D.S.O., C.A.M.C., Officer Commanding of the Sanitary Section of a Canadian Division, is accredited the honour

of developing a simple means for the destruction of lice by baking the blankets and clothing of men at a temperature of 150° F. to 160° F., this heat being sufficient to destroy both the lice and their eggs. This and the utilization of a simple hut steam sterilizer for clothes and blankets designed by Lieutenant-Colonel Amyot, C.M.G., of the Provincial Board of Ontario, have contributed to an extraordinary degree in the comfort and sanitary welfare of our troops.

In the more easterly zones of the conflict, such as in Greece and Mesopotamia, diseases such as malaria, the plague, and dysentery in both forms prevail. Even here, and often under the most trying circumstances, the resources of the medical officer sufficed to prevent any but the mildest outbreaks of any of these affections.

Venereal Diseases.—Of venereal diseases in the army there was in the early days of the war a good deal of apprehension on the part of Canadian fathers and mothers. They were concerned as to the dangers to which their sons were exposed in England and France from venereal affections. Previous to the war, no effective measures for dealing with these affections were in operation in either Canada or Great Britain, and it was found necessary to employ in the army every practical procedure which experience has proved of value. These are:

(1) Education. By means of lectures, moving-pictures, etc., the soldier is instructed in personal hygiene, his patriotic feelings respecting the need of the nation are appealed to, he is taught that continence is compatible with health, the dangers to his family and to his future health and to others are pointed out, he is instructed as to the nature and means of infection of the various venereal disease affections and their results. In all a series of five lectures were given by the medical officer to all officers, non-commissioned officers and men.

(2) *Inspection.* There were weekly inspections of every unit, held without notice.

(3) *Recreation.* Recreation such as theatres, boxing matches, and various sports were provided under supervision.

(4) *Prophylaxis.* The men were instructed in preventive measures.

(5) *Early treatment.* Early treatment centres, open night and day, were provided at every Canadian orderly-room and in addition there were two in London and one in Paris. Further, similar centres for the use of Australian and New Zealand centres were open to Canadians. The men were warned that while both pro-

phylaxis and early treatment are of great value, they do not afford absolute immunity.

(6) *Penalties.* Half the pay of soldiers suffering from acute venereal disease is docked while the men are on the sick list, and during convalescence they are given fatigue duty and provided with suitable sports.

Results. The results, as shown by the report of the Canadian Sanitary Officer, show that in September, 1916, from nearly forty-two thousand Canadian troops in Great Britain there were nine hundred and sixty venereal disease cases; during the month of September, 1918, from one hundred and ten thousand Canadians in Great Britain there were seven hundred and fifty cases. Thus it will be seen in two years the venereal admissions had been reduced 66 per cent.

Within the last year the majority of the Canadian provinces have adopted measures dealing with the venereal problem, and in the course of demobilization through the foresight of the A.D.G.M.S. no soldier is discharged until he has had sufficient treatment to practically secure that he is non-infective. Cases requiring further treatment are notified to the executive officer of the Provincial Health authorities, and through him the local medical officers of health are given confidential information respecting each case. It then becomes their duty to direct the man to the nearest district centre or to a Soldiers' Civil Re-establishment for such further treatment as he may require. Since this plan has been adopted in February last, there have been approximately five hundred cases so instructed in the Province of Ontario.

Colonel Adami very aptly remarks:

"It is not the civil population that has to fear the soldier, but the soldier the civil population. Throughout the war the soldier has been well cared for, all means have been employed to diagnose venereal disease at its very onset, and to give hospital treatment immediately. It is then that disease is most easily controlled. Every soldier has been warned time and again of the dangers he runs, has been instructed as to personal hygiene, and has been afforded early treatment under supervision. As a result, there is no section of the community which at the present time is in a cleaner and healthier state; no section of the community which has less venereal disease. I speak here for the whole body of the Imperial forces. As for our Canadian experience, I may say that this autumn the instruction was given that all soldiers returning to Canada whose medical history sheets bore the record of venereal disease

should be given the Wassermann test. I have the August figures showing that 2 per cent. of the total number returning reacted, and all these were tertiary, non-infectious cases, for no active primary or secondary cases are permitted to return. The average number of reactions in the civil population is estimated at from 8 to 12 per cent. There is four to six times as much syphilis in the civil population as in the army. But in the meantime nothing of any moment has been accomplished for the civil population. Lord Sydenham in his letter to the *Times* of January 7th, speaks of the provision of early treatment centres. 'We are endeavoring,' he says, 'to secure the organization of clinics continuously available where early treatment by competent persons can be obtained.' But they are not available to-day. They will not at the present rate be available until demobilization—and demoralization—have become a matter of history. To meet the situation they should be scattered thickly all over the country. A man must not have to take a two-hour's journey after the act; he certainly will not take it. The dearth of expert syphilologists and of bacteriologists qualified to carry out the delicate Wassermann and other complement fixation tests demands that the centres for ordinary venereal diagnosis and treatment under the Act be few and far between, situated in the great centres of population. It is thus the civil population that to-day constitute the grave danger."

A serious handicap to the efforts of both army and civilians in the future care of venereal disease cases, particularly syphilis, is the expense of the arsphenamine compounds. In Canada the manufacture and distribution of these products are in the hands of two parties who have licenses therefor under the War Measures' Act. Neither of these parties has any vested right of invention or discovery but the monopoly held by them and the embargo secured by order-in-council against all foreign products keeps the price at a figure ($2.00 per dose), which is almost prohibitive to the ordinary individual and makes it difficult for boards of health or municipalities to provide as they should free and adequate treatment for all.

Nothing produced in any country should in this age be controlled by a monopoly which will enhance the price to the public. If this is true in respect to the ordinary articles of commerce, how much more important that the same principle should govern in respect to an article *necessary to the prevention and cure of one of our most serious communicable diseases.* The members of this Association will be gratified to learn that very soon the monopoly in

respect to the so-called salvarsan remedies will be a thing of the past, because after two years of persistent effort on the part of the Provincial Board of Health, it has been announced that a license for the manufacture of these products will be given to the Province of Ontario, whereupon we hope to produce the remedy at a cost within the reach of the poorest citizen of the country.

The Results. And what are the results of the sanitary precautions taken by the Canadian Medical Service?

In the present war, the Canadians had about half a million men enrolled. Of these, counting from 1914 to December, 1918, according to official figures supplied by the Department of Militia and Defence, fifty-one thousand, eight hundred and fifty-three died of wounds and but two thousand, eight hundred and fifteen from disease. In other words, the deaths from wounds were over eighteen times as great as those from disease.

These are astonishing figures, and if they were not official, could scarcely be believed, when it is remembered that the deaths from disease in the South African War of eighteen years ago amounted to 65 per cent. of the total death-rate. Note the comparison! 65 per cent. as against 5·14 per cent. This record is an achievement which forms the best answer to the criticisms made of the work of the C.A.M.C. The results indicate in a remarkable manner the value of the resources of modern scientific medicine when applied under a well-organized and efficient medical administration. They form an example for civil health administration and are a rebuke to the public which fails to accept well-known sanitary measures which prevent the outbreak of epidemics and their resulting mortality.

Effects of the War on Public Health. Since every physician in the army is *ipso facto* a health officer, it follows that much practical knowledge of sanitation has been acquired by those who have been medical officers during the war. The men themselves have seen the value of measures of prevention, such as inoculation, vaccination, the protection of water-supplies, venereal prevention, etc. It is not hoping too much to assume that the experiences of both officers and men cannot but be of great importance to the future of public health in Canada.

Personnel. Canada sent approximately three thousand medical men to the war. In the Canadian Forces there were approximately two thousand five hundred medical officers and an equal number of nursing sisters, and to the R.A.M.C. there were supplied

about four hundred and fifty medical officers and three hundred and fifty nursing sisters.

It is with feelings of pride that one reads the story of the medical profession of this country in relation to the war. This record is ably told in Adami's "War Story of the C.A.M.C.". It is proper that appreciation of the profession of Canada should be placed on record. No men of any class or profession in the Dominion have sacrificed so much as those physicians and surgeons who gave service overseas. Many of them by reason of age or physical condition might very well have claimed exemption and remained in the practice which had taken years and infinite self-denial to establish. Many of them were mere boys either out of college or with their college courses unfinished. Many, alas! will never return. With a noble, unconscious serenity they left their homes, and all that was dear to them, and in the glad spirit of youth went forth to aid in saving for their country the priceless gifts of happiness and security which they alone cannot enjoy. Among them were some of the finest types of professional life in this or any country. If we have been saved by their sacrifice, the poorest return, but the only one, we can make, is to keep their memories enshrined forever in our hearts, and to remember rather the valour and glory of their deeds than the tragedy of our loss. It is for us to keep the faith for which they yielded their lives.

BIBLIOGRAPHY

ADAMI.—"War Story of the C.A.M.C."
"Report on the work of the Canadian Medical Services."
SEAMAN.—*American Review of Reviews*, vol. xxxii, 1905.
SEAMAN.—*The Outlook*, vol. lxxix., 1905.
"Report of the Royal Commission on the South African War," *British Medical Journal*, August, 1903.
The Century, vol. lxx., 1905.
The British Medical Journal.

THE PHYSICAL CENSUS

By J. G. Adami, C.B.E., M.D., F.R.S., *Colonel C.A.M.C.*

[The Armistice and the changes impending at the Ministry of National Service rendered it inadvisable to publish this in full at the time of delivery. Various causes have combined to hold up a further development of the physical census herein discussed, but it has been thought well to publish this now as indicating what advantage would be gained by the Dominion in developing such a physical census of its manhood.]

ALMOST without our realizing it, this war has brought about the most far-reaching social innovation that Great Britain has experienced, an innovation that has been introduced so naturally that I doubt if one man in one hundred thousand has realized its vast significance. It is an outcome fraught with huge potentialities, one that has touched our profession and touched it very nearly, seeing that we have been the essential instruments.

When Great Britain and its Dominions possessed a voluntary army it was right and proper that those who volunteered should submit themselves to a physical examination before being accepted. It would have been futile to accept a Falstaff's regiment of the halt and maimed, the decrepit and mentally affected. Everyone recognized that our recruits must reach a certain standard of fitness before being accepted; must measure up to a certain height, weight, and chest capacity, and be endowed with a reasonable number of limbs and digits, with eyesight sufficient to see the object aimed at, and with freedom from such ills and deformities as are incompatible with "carrying on" in the field.

In other words, from time immemorial certain standards of age, height, and physical conditions have in the various countries determined the acceptance or rejection of men for the army. The medical history sheet and attestation form of the recruit of August, 1914, were no new things. With progressive modification—the last of which was the entry regarding inoculation against enteric—they had long been in use in the British Army.

With the onset of the war, therefore, we were fully prepared for the preliminary physical examination of the would-be soldier,

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An Address delivered before the Medical Society of London on November 25th, 1918.

and when from voluntary we passed to what may be termed, if not "impressed", certainly "impressive" service, and from this to conscription of all men of serviceable age, it was scarce noticed that at a bound we had established, under the Ministry of National Service, a physical census of the active manhood of the British Isles, and in November, 1917, for the first time had placed ourselves in a position to gain a comprehensive grasp of the quality of that manhood, of its efficiency and its deficiencies. This, and all that it connotes, is the outcome to which I have referred.

The information sought in the physical examination of the recruit or, more accurately, during these latter years of the war, the conscript, and recorded upon A.F.B. 178, the medical history sheet, is of necessity confined to a very small number of headings —name, place and date of birth, occupation, height, weight, girth of chest, colour of hair and eyes, complexion, physical development, data regarding vaccination, vision, identification marks, and defects or ailments.

Of necessity, because of the urgency of our need. The nation was unprepared for conscription. There were no previous records of the individual to form a basis. The medical boards throughout the country had to examine the conscripts in their tens of thousands, and in their millions. The physicians comprising the medical boards were themselves untrained to the work. Scores, and in some cases, hundreds of men had to be passed under review day after day at the various centres. A minimum of essential information had to be elicited. At first the one problem to be solved was, is the man, or is he not, fit for active service. At a comparative early period in the war, with the imperative need to employ every available man, it was recognized as absurd to employ the thoroughly fit elsewhere than at the front on full active service.

Such men were wasted if employed at camp and garrison work in England, and along the lines of communication. Much necessary work at the base and along the lines of communication could be performed by men incapable of standing the strain of front line service. And so the second year of the war had seen men classified into categories A, B, C and D, "A" including those fit for active service at the front, "D" the unfit and the rejected, "B" and "C" representing different grades of partial fitness.

The interesting fact is that the relatively few headings of the medical history sheet, when properly translated, proved themselves fairly adequate for army purposes and, what is more, have given us a sufficiency of data from which to construct a first census of

the physical capacity of the adult manhood of Great Britain and her Dominions of service age.

It is that census and its significance that I want to discuss, and the time is fitting. During the last four years, while the war was in active progress, you can well understand that any full study of the results of this physical examination might have given information regarding our man power to the enemy, information of the very first importance. To-day, if peace has not been as yet declared, the very terms of the armistice and the acceptance of the same, make it impossible for the enemy to take up arms again for years to come.

Let me confess that I am no statistician, and for your comfort assure you that I am not going to inflict upon you long series of figures. Some I will have to mention, but they will be as few as can be employed to establish or illustrate my main contentions. Those few will, I think, be such as you can accept. So far as regards Great Britain I owe them to the Minister of National Service, or more accurately the present President of the Local Government Board, and to the admirable staff in Victoria Street under Sir James Galloway and Colonel Rhind respectively. It is not the figures themselves, but their lesson that I want to dwell upon.

Saying this, I fully admit that the figures have to be used with great care. For example, the standards of eyesight have been lowered during the course of the war, so that a certain proportion of men have in 1918 been accepted as fit for active service who would have been rejected in 1914. The same is true regarding height. Of late years we have accepted pigmies for active service and formed them into battalions. Then again, the figures given are those of the men who pass their first physical examination before the National Service Boards. If the experience in Great Britain has at all corresponded with that of the Canadian Expeditionary Force, there must in addition be heavy culls by the army medical boards before men passed on as "A" are permitted to embark for service at the front. If these were taken into account it would only emphasize yet further the lesson to be learned.

On the other hand, the only careful analysis of categorization has been made upon the 1918 men examined by the National Service Boards, which have been in action since November, 1917, and it may be objected that the bulk of the virile young manhood of Great Britain had already entered the army, so that these late statistics give of necessity an unduly low proportion of high grade men. Now there is some force in this contention, but on the other

hand it must be borne in mind that the largest class of men examined in the first six months of this year was that of the new crop of those attaining eighteen years, while of the remainder the bulk was composed of exempted men of various ages, miners, munition workers and other men certainly above, and not below the general average of fitness. The work of the years to come will decide how nearly the present figures afford an accurate index of the physical fitness of the nation. I learn from the Ministry of National Service that the returns for the first half of 1918 are regarded as constituting fair samples of the state of affairs in the various districts.

This matter of categorization has been so much before us that it is unnecessary for me to define what constitute the different grades. At most it is well to recall that in Grade A are included all men who promise from their physical condition to develop under training into soldiers fit for active service at the front. In it there are included what may be termed strictly average men and those a shade below the average, together with all who are above the average. In Grade D are included those at the other end of the scale, found upon medical examination to possess disabilities which debar them from any form of service. Below D come men of the M class—men so obviously unfit as to be rejected on mere inspection, without further medical examination, men who have lost a limb, or exhibit grave deformities or hopeless lack of intellect.

Yet one further prefatory consideration in order that you may grasp the bearing of the few figures which I am about to inflict upon you. I can best put the matter before you by following closely the argument employed by Professor Arthur Keith in a letter to Sir James Galloway, brought before the Scientific Committee of the Advisory Medical Board of the Ministry of National Service, and also in a lecture delivered by him at the Royal Institute of Public Health on October 9th, 1918. If we take a thousand or ten thousand individuals unselected and sort them into classes according to their position in the scale as regards any one property which is capable of accurate measurement, and plot out the results, we obtain what is known as a polygon of frequency. Take, for example, height. A thousand Cambridge students measured for stature gave the following results : those measuring five feet nine inches formed the largest group. Those measuring more than this and less than this formed classes which inch by inch tailed off on either side in a curiously symmetrical manner. There were roughly as many men one inch above this mean as one inch below, and the classes steadily diminish in size as we pass away from the

mean of five feet nine inches, until the curve joins the base line at five feet one inch and six feet five inches respectively, which, taking one thousand men means that, in the University population, well under one in one thousand men are under five feet one inch in height, or over six feet five inches.

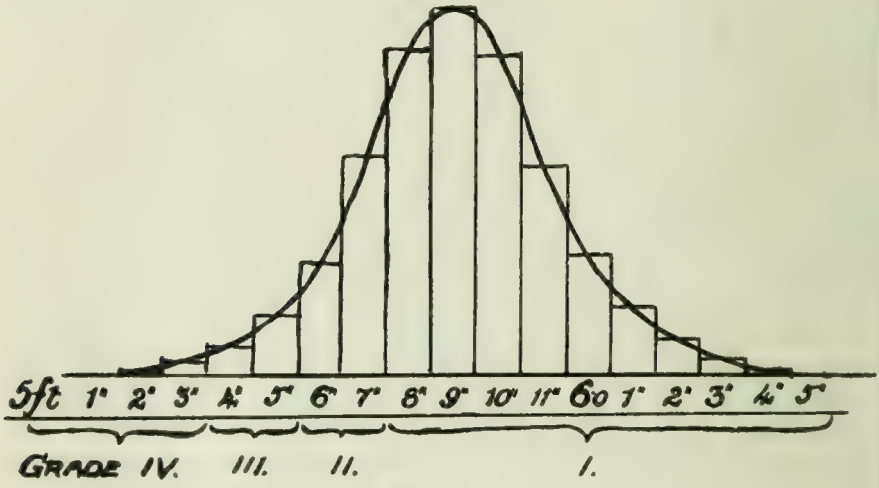

FIG. 1.

On this polygon of frequency we can construct, as shown in the diagram, what is known as a curve of frequency, and this you will observe is symmetrical about the mean. Now if this be true for height, we may apply the same principle with fair security to other measurable properties of the men composing the British army, and so, combining the results, construct a polygon or curve of frequency illustrating the efficiency of our conscripts. In the polygon of frequency for height, Professor Keith points out that the mean class (of those of five feet nine inches), together with the classes above the mean, constitute 56 per cent. of the total. If we include those just below the average, namely the men of the five feet eight class, these together constitute 70 per cent. of the whole. It is the average man, those above the average and those just below the average, who become graded as Class I, *i.e.*, as men fit for active service at the front. On these figures he has estimated that in a normal population each one thousand men of serviceable age should afford seven companies of "A" men, of Grade I, two companies of Grade II, three platoons of Grade III, and one platoon of Grade IV.

700	out	of	each	1000	should	belong to Grade I.
200	"	"	"	"	"	II.
75	"	"	"	"	"	III.
25	"	"	"	"	"	IV.

In favour of this estimate on his part is the fact that the nearer we approach to a healthy and what may be termed a normal population, the nearer do we approximate to these figures. If, that is to say, we take the findings of medical boards upon young adults brought up under healthy surroundings, in country rather than in city districts, or still more clearly in those following active muscular occupations, as for example, young colliers, we observe that they yield results which come close to "Keith's index". We must be prepared to find that the older the man, the more he has been exposed to strains of various orders, infections, accidents, overwork and nutritional disturbances, the less his general physical efficiency. With most of us the descent from football to tennis after the age of twenty-five, and from tennis to golf after thirty-five, or yet earlier, is an expression of this fact. Already at the age of twenty-five there is a reduction in the number of Grade I men per thousand, and from this to the age of forty-five the descent is rapid. As to this descent, even before the age of twenty-five years, I need but recall to you the experience of the Air Service and the results, not merely of their physical examinations for pilots and observers, but equally of practical experience I have, it is true, a friend who managed to pass his board for admission as a pilot after the age of fifty, but he is a "*rara avis, aviator rarior*".* In general, from eighteen to twenty-four includes the period during which men are found fit to fly, and at twenty-five more candidates, I understand, are rejected than accepted. I call special attention to this, because in the figures I am about to put before you this matter of age and its effects has not been taken into full consideration.

I am inclined to believe that this failure to take age incidence into account has led to a certain amount of exaggeration as to the health conditions, or want of health conditions of the manhood of Great Britain.

When, for example, we obtain the following results of the medical board findings in one district, with variations in the Grade

*Sir St. Clair Thomson has called my attention to the better known case of Gabriele d'Annunzio.

I men from three hundred and fifty-four in February to double that number in April, it is obvious that we have to deal with more

RATE PER THOUSAND

Keith's normal	Grade I	II	III	IV	Number examined
	700	200	75	25	1000
A mining district					
January, 1918, per thousand	382	129	355	133	1115
February, 1918, per thousand	354	84	450	110	723
March, 1918, per thousand	427	184	332	55	2673
April, 1918, per thousand	703	136	128	32	7030
May, 1918, per thousand	523	187	241	39	11,526

than can be attributed to seasonal influences, that the men appearing before the Boards in February were of a different class from the April group, and the explanation must be, and on enquiry I find that it is, that in February there appeared more elderly munition workers, in April there were called up almost exclusively youths of the 1918 vintage, those who had recently attained the age of eighteen. As shown by one of the National Service Commissioners*, from a study of the Boards in one our our great northern cities year by

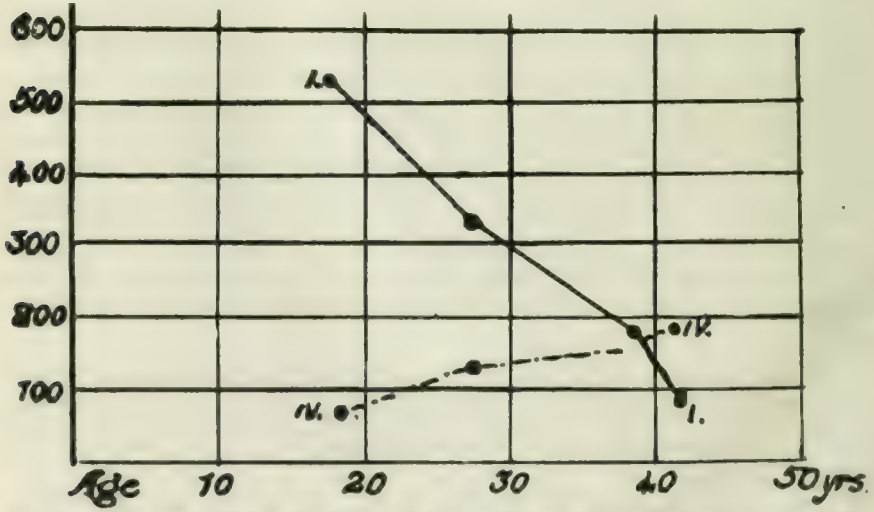

FIG. 2. Rates per mille of Grade I. and Grade IV. men respectively at successive age periods.

*I am in the unfortunate position of being unable to quote my authorities as the time is not yet ripe for making public the condition of individual districts.

year the number of Grade I men decreases with striking rapidity. In this city, men aged eighteen years, eight months, yielded five hundred and thirty-one of Grade I, while those of the age period thirty-six to forty yielded less than a third of this number, namely one hundred and fifty-four, and of men of forty-one years of age only seventy-two per thousand passed into Grade I.

Doubtless it is figures like those for February that led the Prime Minister lately to declare that the results of the physical examination of the manhood of Great Britain demonstrated that the physical state of the British people is lower than that of any other civilized country. It looks appalling when a thousand adults, instead of affording seven hundred men—seven companies—fit for active service at the front, yield only as here, three and a half companies, or as in a great textile centre, less than one and a half. I cannot find out upon what official information Mr. Lloyd George made this statement. My experience of the heads of the Ministry of National Service is that they are extraordinarily cautious as to the information they impart.

I do not say that the Prime Minister was mistaken. It is quite possible that his statement is correct—that with his clear vision he has once again seen farther into the heart of affairs than the rest of us. No civilized country has so dense a population, and none so large a section of population which for an equal number of generations has led a factory existence with all its known attendant effects upon the physical well-being of the individual and his offspring. All I would say is that the figures collected have not yet been fully analyzed, and that until that has been done, judgement may well be suspended. Before any positive statement can be made there is needed an analysis of the grading in various districts *according to age.*

This, I have not the least doubt, will show certain districts yielding results gravely below the average. As a matter of fact we already possess data demonstrating this. Certain National Service Commissioners have already made the necessary analyses for their districts. Thus a small West Midland group of those of eighteen years yields six hundred and sixty per mille in Grade I. From a northern city one commissioner reports as already noted, five hundred and thirty-one; in a busy manufacturing town of the Midlands the number was five hundred and seventy-three; whereas in certain Midland country districts it rose to eight hundred and five to eight hundred and nineteen per thousand. With such figures as these last it cannot be said that Dr. Keith has placed his "Bogey" too high.

Judged from these figures we may safely take the April figures as representing in the main the eighteen year old class. Of these I am indebted to Sir James Galloway for the monthly statistics for the first half of this year of all the districts in a representative section of England—representative, in that it embraces areas which are some of them predominantly agricultural, others mining, others industrial, among the latter one of the greatest textile centres, and one of our most noted centres for munition factories and workers in metal; along with these there is an important seaport. Taking the Grade I men alone for April we have the following figures:

	No. examined	No. Grade I per mille
A mining area	7030	703
A munition (metal work) area	8919	660
An industrial area (cotton, jute, etc.)	5295	623
An agricultural area	2871	613
A seaport and shipping area	1238	491*
A textile area (woollens)	5001	405
A textile area (woollens)	2933	384

Here, granting that we deal with men of the same age period, we have indications to an even greater extent of the loss of effective man power in certain classes of the community, and these indications are supported by the fact that it is not in one month's returns only, but month after month the proportion of Grade I men is materially lower in certain districts than they are in others. The indications are those of a condition so serious that for this reason alone it is essential that the Ministry of National Service continue its work after the war, if only to probe thoroughly into this matter of the relative health and efficiency of our manhood in different districts, engaged in different occupations. The country cannot stand that there should be large masses of our population, in which more than half of the youth fail to attain even to a standard well below the average of physical condition. Once we have learned that an index of physical fitness is possible, once we have established such, it is a national need that the work be continued, so that, detecting our weaknesses, we set to work to counteract them. No modern country can exist without its statistics of births, infectious morbidity and deaths. These are regarded as essential for an understanding of the sanitary state and status of a country. But surely a far more

*These low figures may be due to the fact that a very high proportion of the young men had volunteered for sea service before the age of eighteen.

accurate and delicate index is afforded by a census of the condition of the adult manhood of the country, not at the two extremes of birth and death, but in its productive period; for the physical state of the young adults is an accurate index of the health and well-being of the nation.

As a basal investigation it is evident that what is now needed is an analysis of the medical history sheets for 1918, if not of the whole country, at least of areas devoted to special pursuits—or better still of those engaged in special occupations, in order to observe the primary condition of those engaged, and the progressive effect of those occupations upon the physical state of the workers. We need an analysis of the physical state of, say one thousand workers in each important occupation belonging to the quinquennia eighteen to twenty-three, twenty-three to twenty-eight, twenty-eight to thirty-three, and so on. With this we will possess a sound foundation, and provided with this we will for the first time be able to make positive statements regarding the state of our adult population.

It is likely, for instance, that the strong healthy youths in a given area elect some vigorous occupation for their life work, such as mining, metal work and engineering; whereas the less fit engage themselves in textile industries, clerical work, shop-walking and the like. Thus at the age of eighteen we must expect to find higher results in the more strenuous occupations.

The essential point is to determine the effects of these occupations, the extent of the lowering of the grades after five, ten and fifteen years.

The work of this last year by the Ministry of National Service affords the country a unique opportunity to know itself, and know where it stands, an opportunity which must not be missed.

Personally I owe it to the Ministry to state that my enquiries there have been met with the greatest courtesy, and most cordial willingness to impart information. While the war was continuing, I could not conscientiously ask to be provided with data of the order here indicated, the compilation of which would have placed too heavy a strain upon a staff already hard worked. Since the signing of the armistice the time has been too short to obtain the necessary figures. But the material is all there, together with those trained in abstraction of data for statistical purposes.

So much for the aspect of the physical examination of our adult manhood and its significance. Let me now turn to the other

extreme and take up the information we possess regarding Grade IV—the rejected.

It is evident that if in any district there are obtained not seven hundred, but, say, four hundred of Grade I men, the remaining three hundred must be distributed among the other grades, and that thus a lowering of the physical capacity of the district is accompanied by an increase in the number of the rejected. Most, it is true, of those who fall out of Grade I find themselves in Grades II and III, particularly in the earlier years. It is after forty that Grade IV increases by leaps and bounds. Taking all ages together, in certain large manufacturing towns in the north the rejections in January and February of this year rose to as high as 26·8 and even 30·4 per cent. of the total examined. In the two instances here cited the Grade I men had fallen to four hundred and twenty-seven and three hundred and fifty-eight per thousand respectively. The full significance of these figures can only be determined, as already emphasized, when an analysis has been made according to age.

If twenty-five per thousand be taken as the normal figure for Grade IV, at eighteen years of age, we find among young adults that when Grade I falls to just below five hundred, Grade IV may rise to between fifty and sixty. There are, however, considerable variations in this respect in the different districts, possibly associated with the prevalent occupations in the same.

We owe to one of the Deputy Commissioners an analysis of the causes of rejection of men between the ages of eighteen and fifty-one. Between January 1st and June 30th, 1918, twenty-four thousand, two hundred and eighty-one men in a large Yorkshire town were examined. Of these one thousand seven hundred and seventy (or 72·8 per mille) were placed in Grade IV. There were in addition seventy-four in class M men, so "obviously unfit" that medical examination was dispensed with. It is to be noted that in this area several thousands of miners were called up for examination up to the age of thirty-five years, and the Deputy Commissioner calls attention to the fact that the majority of the rejections occurred between the ages of twenty and thirty.

I have taken the liberty of arranging his data, not as in the original report, according to relative frequency, but in classes according to the cause of rejection.

ANALYSIS OF MAIN HEADINGS OF CAUSES OF REJECTION IN 1844 CASES IN AN INDUSTRIAL (MINING) CENTRE

I. Infections and Their Results

	No. of cases	Percentage of rejections	Percentage of total examined
Tuberculosis	584	31·6	2·3
(Pulmonary tuberculosis, 468 cases or 25·3 per cent.)			
Valvular disease of heart	188	9·0	0·7
Infantile paralysis	69	3·7	0·29
Otorrhœa	41	2·2	0·17
Chronic bronchitis	39	2·1	0·15
Rheumatoid arthritis	26	1·4	0·1
Disordered action of heart	10	0·5	—
Totals	957	50·5	—

II. Injuries and Occupational Conditions

Amputations	104	5·6	0·42
Varicose veins	98	5·3	0·4
Injuries (head, back, and extremities)	81	4·9	0·33
Opacity of cornea	12	0·6	0·04
Miner's nystagmus	11	0·6	0·04
Flat foot	11	0·6	0·04
Hallux valgus	11	0·6	0·04
Ventral hernia (post-operative)	7	0·4	0·02
Totals	335	18·0	—

III. Nutritional and Chronic Disorders and Intoxications

Chronic nephritis	48	2·6	0·19
Knock-knee	11	0·6	0·04
Cataract (excl. congenital)	10	0·5	0·03
Amblyopia and amaurosis	6	0·3	0·02
Exophthalmic goitre	1	—	—
Totals	76	4·0	—

IV. Conditions in The Main of Antenatal and Natal Origin

Epilepsy, major and minor	70	3·7	0·29
Idiocy and arrested mentality	53	2·8	0·2
Talipes	18	0·9	0·17
Myopia	18	0·9	0·07
Dumbness	10	0·5	0·03
Diabetes	6	0·3	0·02
Neurasthenia	5	0·2	—
Other inherited and congenital conditions	11	0·6	—
Totals	191	10·0	—

V. Conditions in Part of Antenatal Origin, in Part Nutritional, Occupational, or Infective

Curvative deformity of spine	34	1·9	0·14
Poor physique	30	1·5	0·13
Inguinal hernia	11	0·6	—
Totals	75	4·0	—

VI. Other Causes Not Clearly Coming Under The Above Headings

	210	11·3

The outstanding feature in this analysis is that eminently preventable causes constitute much the greater portion of the headings. Infectious disorders and their results constitute more than half; tuberculosis of all orders roughly one-third, pulmonary tuberculosis just over one-quarter. The most impressive feature about these tuberculosis figures is that the majority of these cases diagnosed by the medical boards had been previously unsuspected and unreported. According to Sir James Galloway, in a Midland area, four hundred and seventy-six men were referred to the tuberculosis authority of the area as suspect. Of these, two hundred and seventy-seven were found affected. Of the two hundred and seventy-seven, no less than two hundred and eighteen were previously unrecorded. They were cases of active, but hitherto unrecognized tuberculosis. Here in an industrial centre injuries and amputations constitute one-tenth of the causes (if I have read the figures aright). I confess to a little surprise, both in this particular series and in other series that I have studied, in finding that inherited and congenital defects and those dating from parturition constitute only some 12 per cent. I had not, that is to say, expected so large a number of infectious cases to show themselves, and indeed did we deal with only young adults from eighteen to twenty-five, with the diminution of the infectious group this antenatal and natal group would stand out more prominently. There is also another modifying factor (and this explains also the relatively small number given under the heading "poor physique", namely that those born into the world with more or less serious defects, and with enfeebled constitutions, are more susceptible to infectious and nutritional disorders, and when these appear for examination it is the active process rather than the underlying and predisposing factor that is given as the cause of rejection. With the pouring in of immigrants from south Europe, and notably from Austria, Poles,

Galicians, Ruthenians and the like, we in Canada just before the war were rapidly developing slums—and bad ones at that—in our larger cities. Nevertheless, in general, the conditions of life in the North American continent are healthier and more "open air" than here in Great Britain, and the impression given to the Canadian or American visiting the industrial centres of northern England after long absence, is a painful one. The stunted appearance of the workpeople in spite of apparently abundant food, and of cottages no longer back to back, but in fair sanitary condition, lead to the conclusion that we have to deal, not with a condition of individual acquirement, but with a germinal defect; fathers and mothers engaged day in, day out, at indoor occupations, undergo a slow sapping of their strength, and a low form of intoxication which tells on the germ cells as on the body in general, so that the offspring comes into the world in an enfeebled condition, and with incomplete endowment of cellular vitality. We have here, in short, the onset of racial deterioration. I had, I confess, looked to obtain fuller evidence of this deterioration in the form of a greater number of individual conditions of defect. Judged from these figures such deterioration shows itself most often in the form of increased susceptibility and liability to infectious disease, more particularly tuberculosis and rheumatoid affections.

I had hoped, for comparison, to obtain similar studies from the United States, knowing that there so far they have selected for their army only their manhood between twenty-one and thirty years of age—a younger and more homogeneous group from which to draw basal conclusions. But such is the teeming population of that nation that thus far they have only needed to call up their "A" men. Their "rejects" therefore correspond, not to our Grade IV, but to Grades II, III and IV. As confirming Professor Keith's calculation as to what should constitute Grade I, it is interesting to note that up to December, 1917, out of rather over two and a half millions examined, 29·1 per cent. had been rejected, giving a Grade I class of seven hundred and nine per thousand, reduced by later rejection in camp to six hundred and sixty.

I have taken the figures given by my friend Dr. E. L. Fisk* of New York. He deals with the results of seven medical boards in Detroit, Brooklyn, and New York, with seven thousand, six hundred and eleven men examined out of eight thousand, eight hundred and seventy-three called. As showing the difficulties in arriving at precise results it may be noted that there is here the question

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raised as to what was the condition of the twelve hundred odd who were not given an examination. I have classified his figures after the plan adopted in the last series and obtain the following results:

I.	Conditions in the main infectious and their results	36	per cent.
II.	Injuries and occupational conditions	18·3	"
III.	Nutritional and chronic disorders and intoxication	17·6	"
IV.	Conditions in the main of ante-natal and natal origin	23·5	"
V.	Conditions in part of ante-natal origin, in part nutritional, etc.	14·7	"
		110·1	"

It is evident that in the American Board papers more than one cause may be given for rejection, just as their hospital admissions may give more than one heading for diagnosis. As might be expected from a group of men of earlier age period, the proportion of rejections for infectious disease is much lower. It would be yet lower if it did not include as its largest constituent (no less than 16·3 per cent.) bad teeth, the result of mouth infection. Had mouth conditions been fully taken into account, the British rejections would have been materially increased. The most striking difference is that whereas in the north of England towns 25 per cent. and more of the rejections were on account of pulmonary tuberculosis, here only 3·4 per cent. of the total are not accepted on this account. It is not possible to compare the two tables in the matter of rheumatoid conditions, since in the American analysis all heart conditions are grouped together, constituting 8·12 per cent. of the total. As might be expected, also the injuries and occupational disorders do not loom so large in the more mixed Statesian groups. "Feet" (including flat feet, hallux valgus and hammer toe) form, as might be expected, a more important group of rejections, for Americans in general are not so active on their legs as are the English, and while they pride themselves upon being better booted, that too often means that their feet are "cribbed, coffined and confined" to the disadvantage of those members. With regard to nutritional disorders, "under weight" and "over weight" (15·7 per cent. and 1·4 per cent. respectively) are the most important headings, conditions largely neglected in our British

examinations; while similarly in the group of conditions which I classify as mainly of ante-natal and natal origin, myopia and eye conditions head the list (20·7 per cent. of the total). Possibly I may be criticised for regarding myopia as in the main an inherited condition: it may be argued that it should be included in the next group. I can only give it as my personal experience that myopia, like astigmatism, with which it is often confounded, is largely a family failing, and shows itself irrespective of stress, although admittedly stress aggravates the condition.

But making every allowance, admitting, for example, that these American figures include Grades II and III among the rejects, it has to be confessed that the more we study these and similar figures bearing upon the physical examination under the Ministry of National Service, whether we enquire into the rejects or the relative proportion of "A" men, the more do our hearts become disquieted within us. All is not well with industrial England. And equally must the conviction grow upon us that this work inaugurated by Sir Auckland Geddes must continue and be pressed forward. The service it is capable of rendering to the nation is too great for the work to cease with the cessation of the war. Rather must the accomplishments of this year be regarded as a preliminary canter, or like the practice balls at cricket. This year's work has from one end of the country to the other trained a most valuable band of medical men in the methods of rapid and accurate estimation of the physical state of the individual; it has revealed the strength and the weaknesses of the medical history sheet; it has indicated the lines along which the most valuable results are to be obtained. Indeed you will already have seen that to-night any service that I may perform is not in providing definite conclusions, so much as in indicating by this study the lines of future advance. While we owe to the system that, last spring, thanks to this accurate knowledge of the available man power of the country, the situation was saved, and men could be passed into the army reserves as fast as they were needed to make up for the drafts urgently demanded at the front, it has to be admitted that the work has been carried on inevitably at too great a strain, with too little opportunity to enquire deliberately into the significance of the results.

Under present arrangements, with the onset of March, all the new batch of those who have attained eighteen years will present themselves for their physical examination. Then for the first time we will have the energies of the medical board fully engaged upon the study of one definite age group, and for the first time, without

difficulty, data can be established regarding the efficiency of the young manhood of the country. It is all important that nothing interfere with this. I have heard it argued that with the cessation of the war everything that savours of conscription will go by the board, and it is further suggested that, with this, physical examination will be given up.* I would only say in reply that if industrial Britain and labour have an eye to their own highest interests, they must recognize that in the physical census they have become possessed of what is far and away the most effective instrument for determining, in the first place, these conditions and those occupations which are no longer to be tolerated, and for effecting the necessary changes. Once it becomes demonstrated, not from isolated cases, but from the data bearing upon all engaged in it, that a particular occupation leads under present conditions to the rapid deterioration of those employed, or that a given district, owing to conditions of life therein, is well below the proper average of well-being and health, the government must take action, and must initiate such reforms as will lead to a reasonable and healthy existence and to the uplift of our people. What shall it profit a man if he gain the whole world and lose his own health and peace of mind; what shall it profit a nation if it gain the wealth and the dominion of the whole world at the cost of the degeneration and degradation of its people? For the people is the nation.

And to-day more than at any previous time in the history of these Isles, or of the British peoples, of the Dominions equally with the home country, after the loss of so many of the best and most virile of our manhood, it is all essential that those of the coming generation should be brought to a state of full physical efficiency. The best is needed of every man. The old "laissez faire" policy which is responsible for the defective state of our teeming industrial districts, must go by the board, it must become a memory of the unhappy past.

After all, the country is prepared. School children are now examined periodically and their measurements and condition of health are recorded. It is a natural step forward to repeat this examination at the entrance to manhood. Indeed, if the earlier information could be more available, a more or less continuous record of the medical history of the individual would be provided—the beginning of a health "dossier" of every man.

But, of necessity, if under the new conditions we are to examine

*This unfortunately is what happened.

the new batch of young adults, I will not say that the examination is to be more thorough—for I know that the members of the National Service Medical Boards as a body have done their work conscientiously and according to codified instructions (which the Army Medical Boards did not possess)—but that the records must be more complete. I am glad to know that this matter is being actively taken up by the Ministry of National Service. The data which were sufficient for the army, sufficient to determine whether a man was fit for active service at the front or on garrison duty, are scarce sufficient to form an adequate record. Time forbids that I should enter into any detail. I may, however, point out that space should be afforded to record, not merely generally, but specifically the man's occupation, and to note the nature of any previous occupation; that hitherto it has been considered sufficient for army purposes merely to satisfy oneself that a man has the necessary amount of intelligence, I will not say to understand, but to obey orders. To estimate a man's capacity as a citizen something more is necessary, some indication of the grade of his mental qualities. For citizenship, intelligence is as important as physical capacity. Indeed the medical history sheet takes no account of, and specifically has no space for separate record of the state of the different systems. There should be headings for notes regarding the state of the nervous, circulatory, respiratory, digestive, and other systems, more particularly regarding the first three of those. Encouragement should be given, by providing adequate space, to note previous diseases and not merely one, but, if they be of diverse orders, all the leading departures from the normal which may be factors in lowering the man's category. The time has passed for labelling a man to stand or fall under a single heading. In this way lies the road to imperfect statistics, and imperfect knowledge. It is difficult to say how much harm has been done to the individual in this way by the old army regulation that only a single diagnosis shall appear in the admission and discharge book entry of the individual soldier, which still remains the official record of casualties. As a result, not only are conditions overlooked when the patient is transferred from one hospital to another, but the medical statistics of the war cannot be other than approximate. If, for example, a man be at the same time wounded and gassed, his casualty is entered as the one or the other; if in such case he is entered as wounded, then the record of gassed cases is made inaccurate, and vice versa. And lastly, for pensions purposes, it may easily happen that the soldier claims in perfect honesty on

account of a chronic disturbance set up by a condition which is not that entered in the admission and discharge book, and the official papers, to his detriment, contain nothing which substantiates his just claim.* Not one, but every grave departure from the normal should appear upon the medical history sheet if accurate statistics are to be obtained.

The Empire has in this war lost some three quarters of a million of the fine flower of its manhood, and of the remainder of the three million odd casualties a very large proportion must be seriously and more or less permanently lowered in vitality and in capacity. It is a grave situation. Not merely have we now, in the words of His Majesty, to create a better England and a better Empire, but we have in the first place to counteract this heavy loss, and see that it does not tell against our race for long years to come. Possibly too much stress is laid upon this aspect of the case. It has been said, and before the war I was inclined to believe it, that the small stature and lack of virility of the French were the direct outcome of the widespread destruction of the best of France's man power during the wars of the Revolution and the Napoleonic régime. It was my privilege to be in France in July before the opening of the war, and at Versailles to see some of her best troops engaged in field exercises, and again this last May to travel behind the French lines from the Swiss border up through Nancy and along the valley of the Marne. The change I found remarkable; it was difficult to believe that one dealt with the same race. Now the soldiers are splendid examples of manhood. Rarely have I seen a finer body of men. Clear-eyed, good complexioned, with lithe, easy bearing, as a class they looked an inch or two taller than the French soldier of the days before the war. And what is true of the effects of three and four years of life at the front in the open upon the French, is equally true of its effects upon our own men. This war is very far from being a matter of all loss and no gain. The majority who have survived are definitely finer men from their experience. Again it must be remembered that the mothers who bore the splendid men we have lost have many of them given birth to younger sons of the same quality, too young to enter the army. Those we still have, and their sisters are of the same high breed.

But, undoubtedly, the loss of so large a proportion of Grade I

*This danger to-day is offset by well filled-in Medical Board papers (A.F.B. 179) but in the earlier years of the war this was not the case, and if then his Army Form B 179 was incomplete he now has no redress.

men out of the community gives the Grade IV men a greater opportunity to mate and reproduce their defective strains. I refer here, not to those who are placed in this grade for military reasons, on account of injuries, amputations and the like—conditions which are accidental and have no deleterious influence upon the germ cells—but to those of poor physique, the degenerates, neurasthenics, and deformed, whether in body or mind, and the sufferers from chronic infections. How is this to be guarded against? How are we for the good of the race to encourage our womenkind to reject the "rejected"? There is, of course, no telling what the women of the Empire will do now that they have the vote and admission to the councils of the Empire. This matter of racial improvement is, one would think, a foremost matter for them to make their own. Barring this, I am convinced that in the present temper of our people it is eminently unwise to attempt anything of the nature of restriction of what are regarded as the rights of the individual. Even before the war the restrictive measures introduced into the statutes of sundry States, notably in North America, were seen to be foredoomed to failure: enactments, for example, demanding a certificate of health and freedom from venereal disease before marriage, demanding the segregation of the weak-minded or their castration if degenerates. If these could not be carried out before the war, still less could we hope to put them in force to-day, when there is this widespread ferment for individual freedom, following upon the downfall of the autocracies.

There is a better way, it seems to me, that not of forcible repression of the bad, but of persuasive encouragement of the good.

Let me recall the diagram I employed at the beginning of this address to illustrate the principles of grading, that of the polygon of frequency. You will remember I pointed out that in Grade I we include several classes, namely the mean, those just below the mean, and all classes above the mean. Now this is all very well for the army. All that the military authorities require from the medical boards is the assurance that the men delivered to them are fit for active service; they will undertake the subsequent classification. There is absolutely no reason why in civil life this should satisfy us or that we should rest content with jumbling together the indifferent, the average and the potentially first-class citizen. In that way lies stagnation. There is absolutely no reason to-day that the grades of the Ministry of National Service should be slavishly identical with the categories of the army. There are

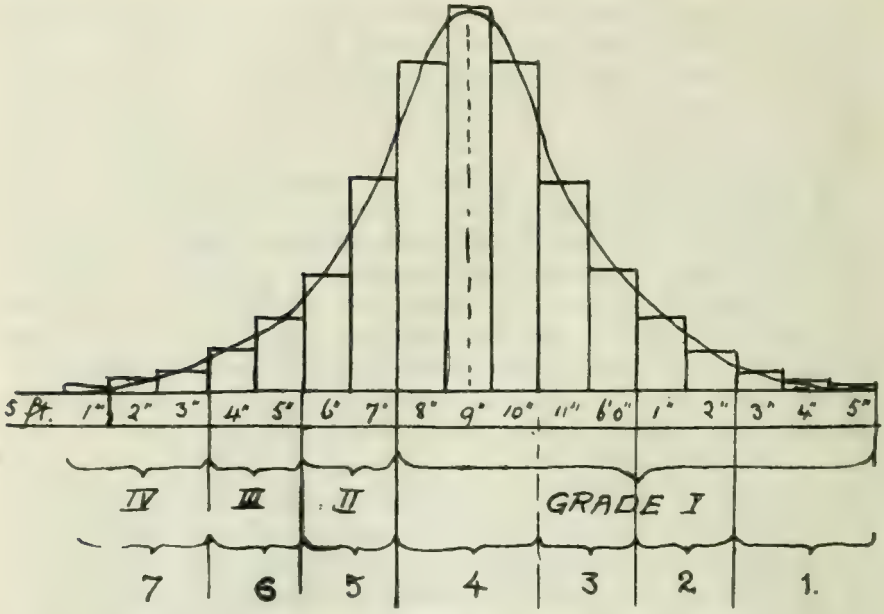

FIG. 3.

powerful reasons why they should not. Encouragement should be given for men to improve their grade, so to train themselves and live, that presenting themselves at stated intervals before the medical boards, they may be given the opportunity to advance into a higher class. Just as we have three grades below the mean, so in future should we recognize those grades above: seven in all.

In this way Grade I would contain the very pick of our manhood, a select class of some 2 per cent. of the whole, men of exceptional development, both physically and mentally.

Grade II, men specially well developed, either bodily or mentally, but with good average qualifications only in one of the two respects. Such men might be subdivided in IIa (physically Grade I) and IIb (mentally Grade I).

Grade III, good all-round men, distinctly above the average both physically and mentally.

Grade IV, the largest class of ordinary average men.

Grades V, VI and VII, would then closely correspond with the present grades II, III and IV.

Do you see where this leads us? It would mean that the best man, whatever his rank in life, would be given the best opportunity; but employers would prefer for responsible posts men recognized

as belonging to Grade I over those of lower grades; that the best women, looking to the future, would seek to mate themselves with men of high and refuse those of low grade; that we would be impatient, for example, of being represented in Parliament by low grade men, that as a nation we would select and encourage the fittest.

Doing this, it would not be necessary to penalize further the Grade VII men by publishing a list of the same, or by segregating them—that, it is true, we might eventually become prepared for. It would, however, necessitate the Government publishing each year a list of Grade I, and preferably also of Grade II men. That would become, as it were, a national stud book; the only duty thrown upon the man who achieves these grades being that he should periodically, say every five years, present himself for re-examination and confirmation, or otherwise, in his category, on pain of having his name removed, due allowance being made, as aforesaid, for lowering of physical indices with advancing age.

I have, it will be observed, all through taken up only one half of the subject, and it may well be asked, what about the other sex? I would answer, here again do not attempt compulsory regulations. It might, however, well be made optional for girls when they attain to eighteen years to present themselves for examination before either the present medical boards or special boards of women doctors*, and if they measure up to Grades I or II, their names similarly should be published officially.

There is but one other note that I would make, namely, in order to counteract local influences acting upon the medical board, the definite classification of Grade I men should not be left in the hands of the Local Boards, but should be confirmed by a travelling medical assize of specialists empowered to make a thorough examination into the qualifications of every one admitted to this grade.

Here, therefore, I would urge as the programme for the new future:—continue the physical examination of young manhood; from its results determine where we are at fault, ruthlessly wage war against those conditions which lower the vitality of our people and thereby raise the general level of health and strength of our people. And with this, by the establishment of adequate grading, recognize and encourage the best and strongest among our people to the end that mating worthily they may propagate a sound,

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*Such Boards, I learn, are already in existence, established in connection with certain of the Women's Services in the war.

strong stock and lead in the improvement of the race. All these generations, mankind has been groping after a proper method of accomplishing the end. It has tacitly acknowledged that good blood tells, has voluntarily put itself under chieftains and accepted the rule of their sons in the belief that the virtues of the sire descend and so has established the hereditary principle. And having established it, more and more of late years, as acted upon, the results leave much to be desired. And yet leaders there must be, and as we see in Russia to-day, the danger is that King Log of a Tsar may be succeeded by King Stork of a Lenine. What has been wanting has been some practical method of selecting the best blood of the nation irrespective of wealth and influence. Here, it seems to me, without pulling down the old, which to many of us means so much, without anything of the nature of a revolution, by the establishment of this new "Grade I" we would at long last lay the foundation of the true aristocracy of the nation.

Fifteen per cent. of the population in Bosnia is absolutely destitute. Typhus is on the increase, both in Bosnia and in Herzegovina. Although only eight hundred cases of typhus are officially reported, the American medical authortities believe that there are more than three thousand. Great difficulty is experienced by the authortities in inspecting Mohammedan homes, where three-quarters of the cases are believed to be concealed.

Mohammedan women refuse to be treated by male doctors, no matter how serious their illness.

A veritable plague of lice overruns the conntry. They are to be found everywhere, carrying with them the germs of typhus. One of the greatest needs of the natives is soap, of which there is none to be had. Typhus is following the lines of communication, especially the railways. American Red Cross personnel members of the Hoover Food Mission and American naval officers avoid the railways as the cars are infested with typhus lice. The American Red Cross is making preparations to aid twenty-two civilian hospitals in Bosnia and Herzegovina and six military hospitals which have been converted into civilian hospitals. Four small hospitals where typhus cases are being treated by American Red Cross doctors and nurses have been established. Aid is also on the way to five military hospitals in Dalmatia, at Cataro, Spalato, Sing, Mijini and Ragusa.

A PROVINCIAL MINISTRY OF HEALTH

By William F. Roberts, M.D.

Minister of Health New Brunswick Government

St. John, N.B.

WHEN I was invited by the Association to read a paper at its meeting, my first impulse was to regretfully decline, for, much as I appreciated the honour of being asked to come before this Society, one of the most influential in the world, the pressing duties, the multiple activities, which make up the life of one who attempts extended public service in conjunction with the stern need of earning a living, ought of right, to prevent my intrusion at this time. But, to be frank, I could not resist the temptation to lay before you a succinct notice of that in which I have become so distinctly interested—I refer to the new departure taken in public health matters in New Brunswick, as embodied in the Public Health Act of that province. It was no sudden notion on my part that led me to the serious consideration of public health. The matter had occupied my attention for years, in some one or other of its phases, and it had become habitual with me to give it what reflection I might, in the somewhat rare intervals of a strenuous city practice. Perhaps the first of these phases was the condition and lot of young children attending the public schools. Individuals, of whatever age, are capable of making an impression upon us, even when we are least reflective, but groups or combinations of persons, when regarded attentively, exert an even greater attraction. The fact that many of the units of such groups were seemingly destined to grow to maturity possessed of many physical disabilities which would handicap them in a very measurable degree through life, appealed to me, and, consequently one of the very first activities of public health in which I became really interested was the medical examination of schools. It is well known that "an idea grows with what it feeds upon", and the contemplation of the crying needs of the school-child called my attention to very many other aspects of preventive medicine. Upon looking around me I dis-

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covered that while a very great deal was being accomplished in the cities and towns of our province in the way of conserving the public health, yet the grounds upon which such conservation was carried on were narrow in their scope, while outside such communities, it did not take long to discover that almost nothing was being done, even in the narrowest way, in the more sparsely settled communities of the province. A health act existed, not, as far as its purview went, at all a bad one. Well administered, it was capable of effecting great good and of saving health and life, but, with the exceptions noted, it was almost a dead letter over the greater part of the province. At first I did not see my way clear to any overt action in the matter. Almost immersed as I was in the surpassing anxieties of obtaining a livelihood, it seemed bordering upon the absurd for me to entertain any idea of mending matters, but an insistent call to represent my constituency in the local legislature unexpectedly opened the way to a realization of what had been, up to that moment, almost wholly academic and ideal. After making it abundantly clear to my friends that if I went into public life it would be mainly and chiefly for the purpose of improving health matters in my province, an agreement was come to, that if they would elect me, I, in my turn, would serve them in the way indicated.

The first step was to ascertain what was, really, the sanitary condition of the province, and what kind of an organization existed for the purpose of maintaining sanitation and the dictates of modern public health ideas. For this purpose I secured a sanitarian from abroad, so as to obtain a really detached opinion, and asked him to make a survey of the province with the foregoing object in view. This he did in a masterly manner, and outlined briefly, but very succinctly, the present conditions of affairs, and the means whereby it might be greatly improved. The chief question was, in order to attain to this improvement, whether to adhere to the old and time-honoured custom of a semi-independent Board of Health for the Province, working under and forming a sort of side department of a minister of the government already appointed, or to take a forward and, largely, untried step, and endeavour to produce a reformation by means of a separate Minister of Health. Indeed, pronounced prepossessions in favour of a separate and independent ministry and department of health had, early taken a strong hold upon me. I therefore chose the latter, and it is chiefly to explain and defend such a step that I am addressing you to-day, and not only so, but that the principle may be brought more widely to the

attention of the Canadian public. By-the-way-, similar action has already been taken or is in contemplation in two of the most important countries of the world—our own Dominion of Canada and in England, our Mother land.

What, then, were the features of the separate Department which appealed so strongly to me as to induce me to leave the beaten path and to launch out upon an almost untravelled and uncharted sea!

Briefly, they were these! As contrasted with a Board, a Ministry of Health is in direct touch with those most of all concerned, the people of the province themselves. To them he is responsible, precisely as a minister of finance, of public works, or of trade and commerce is responsible to the whole people. Further, the responsibility does not rest there. No government can dissociate its various departments or ministers one from another, and say that they approve of one, and deprecate the other. According to our well-founded and understood system of government, the whole ministry is a unit, and, in a way, each member of it is equally responsible with his fellow for success or failure. In a word, under our British system the government or cabinet stand or fall together, and the failure of one species of governmental service can not generally be atoned for by the probable success of one or more of the others. Consequently, by making the conduct of health matters really a part of the policy of the government, it, of itself, throughout all its ramifications, becomes vitally interested in the success or failure of the proposed public health scheme. Hence, the Minister of Health found himself not alone in his endeavours. He realized that behind him was the whole force of his government and his party, and that once grappled with, the question of health would be seen to be so absorbing and important, that no well-grounded opposition to the principle involved could be had, even from the professed opponents of the government and its party. This, really, turned out to be the case; practically, the only criticism of the bill which afterwards became the New Act, being based upon details altogether, and not upon the expediency of the movement.

It may be, and has been objected, that such a department with a political head, would be subject to reversals of policy upon the incoming of new political combinations; but such accidents are, I think, little to be feared. The question of the health of the people differs radically from most governmental problems. These problems themselves are constantly changing their aspect: often they disappear entirely with the advance of the times and changed

environment: not infrequently they assume totally different aspects and require a new departure in dealing with them. So much cannot be said of the public health. In the main the problem remains the same in its fundamentals. Various and varied methods may be applied from time to time to some of its particular phases, but taken generally, the health of mankind requires the same safeguards, the same care and is subject to the same malign influences as it was five thousand years ago. The old *insulae* of Rome did not differ materially from the modern sky-topping tenement of Edinburgh and other cities, and there is a close family resemblance in squalor and wretchedness between the slums of an American city of to-day and the hovels which used to shelter the myriads of Constantinople under the Byzantine emperors. And, again, speaking generally, like disorders require like treatment, and what was found fairly efficient in the tenth century is not to be lightly discarded in the twentieth. In fact, notwithstanding all the advance, and it has been immensely great, in the prevention of disease during the past half century, the proper administration of health laws of whatever kind they may be, provided they be rational at all, is in all likelihood the most important single feature in all public health work.

Now, it is in this very matter of administration that a Ministry of Health, rather than an appointed Board, holds the foremost place. Very frequently it is seen in other governmental service that a change of administration works for greater vigour and effect simply because it is a change. It is age-long knowledge, had from hard and bitter experience, that nothing is more liable to become hide-bound, antiquated and impossible in its efficiency than a board, no matter over what it is called to preside. The literature of fact and fiction both teems with harrowing examples. Boards lose the last vestige of remembrance of the object for which they were constituted, and become wholly obsessed with the profound belief that they exist for their own self-perpetuation; that they have in some way or another achieved a title to immortality, and that, I suppose by such achievement, they have become sacred things not to be polluted by unhallowed hands nor molested by the common herd.

The presence of a minister in and over such an organization, for organization there must be, is like the breath of spring upon a leafless bush. The minister has no time to become rusty or torpid or satisfied with his own excellencies. His constituents both friendly and otherwise protect him from these evils. The one group looks

upon him with kindly intentions, it is true, but generally plays the part of the "candid friend"—that most embarrassing and hateful of relations. The other group makes no pretentions whatever to friendliness, indeed, they frequently pretend the other way and no spot or blemish, either real or fanciful, either upon the minister or his work, will escape their scrutiny or their animadversion. Ministers, therefore, are not likely to grow stale and endure, which points, indeed, are those which chiefly characterize boards.

But the minister has an advantage over the chairman of the board in quite a different direction. It is very plain that neither minister nor chairman can do work without financial sustenance, and in general the only source of such sustenance is found within the walls of the legislative assembly or parliament. Within these walls the chairman cannot enter, and within these walls are many pigeon-holes. At the utmost he must make his wants known by deputy, even if that deputy be no less a person than the minister of that department of which his board forms but a part of a part. This deputy may do his best for him, but, until human nature changes, a deputy will always be a poor substitute, as compared with the interested individual himself, so far generally, as knowledge, ambition and passionate desire to achieve his purpose, are concerned. Deputies, as a rule, are comparatively languid creatures, whether the business to which they address themselves be either love or war, and the result in both activities is apt to be meagre and correspondingly disappointing. A third advantage, and perhaps one not less fruitful than either of the others, of a minister over a mere chairman and a board, is the enhanced status he gives to the business over which he presides. It at once makes this business the equal in every respect to each of the other services of the country. It raises it from a secondary to a primary point of importance, and assumes and maintains a place in the eyes and opinion of the whole country in no degree inferior to any other governmental activity. The laws of such an organization originate in and are supported directly by the supreme power of the State, and never take on the pull and drab character of mere regulation issued by a board and perhaps authorized through a descending scale two or more steps removed from the government itself. This very nearness of their relationship to the sovereign power gives them a dignity and consequent efficiency in no wise attainable by those emanating through delegated authority.

I feel I need not pursue this subject further. At best or at worst this is merely a note, not an address, and is designed not to

elucidate a system of public health organization, but to illustrate and establish a principle.

No apology is needed for placing the question of the health of the people as high in standing as that of any other human interests. It is in fact so high that in comparison all other interests are dwarfed by it. Of what use is wealth without health? But without health, even wealth itself tends to decline, not only with individuals but with states. Nothing is better known to you than the tremendous cost that preventable disease entails, both privately and publicly. It has been fully set forth upon this platform within the past two years and is everywhere being recognized and deplored. What profits it that a man-child or woman-child is born into the world to exist but a day, a month or a year? Of what benefit are millions of a population if they be feeble in spirit, decrepit in action, dull in mentality, through diseased constitutions? Nations without number have perished through these very causes, are perishing now, and will continue so to decay unless and until mankind realizes in bulk that being born is not the main thing, and that dying young is neither a sign of piety or respectability—but that the chiefest and most solemn duty of man here upon earth is to be well born, to live long and contentedly, and to die—if die he must—only when he is worn out by years and not by preventable disease.

According to statistics compiled by Dr. M. O'B. Ward, of the city health department, the influenza epidemic of last November claimed 3,341 victims in Montreal, or 5·37 per 1,000 of the population. The average age of the victims was twenty-five years. Of the total number, 1,408 died of ensuing complications, pneumonia and bronchial pneumonia.

The cause of the epidemic is attributed to the great dampness and abnormally low temperature of October The temperature was 4·11 degrees below the average of the last forty-four years, and the rainfall was 4·32 inches more than usual.

ANTI-TUBERCULOSIS LEAGUES IN THE DISTRICTS OF SANITARY INSPECTION

By Dr. E. M. Savard, D.P.H.

Quebec

HUMAN health was hardly appreciated to its full value before the war. But it seems now, when the ghastly fray has ceased, that the world feels more its loss and realizes better not only the value, but also the frailness of human life. An intense sentiment is spreading, which sprung up naturally in the trenches, that is the sentiment of conservation.

In this lesson taught by the war, the physician found a duty. For he has to think not only of himself, but of others. And I may venture to say, what nobody will deny, that the men of our profession emerge from the war period with a keener if not deeper sense of their duty. They know that they must not be satisfied with attempting, in every case under their care, a problematical cure. They understand, more and more, that the physician has, indeed, a social part to play: that is to try and prevent.

They take accordingly to hygiene, a prophylaxy found more important than the other one, since it aims not only to the preserving of health, but moreover to its *increasing*.

And so, instead of the direct fight against the infectious germs —that is, the simple prophylaxy of contagion—they have come to recognize, they as well as the public, the superior effectiveness of hygiene, by which can be destroyed the powerful influences which make a bed for tuberculosis or other infectious diseases.

We have, as an illustration, the different methods employed in Germany and in England, respectively, in the fight against tuberculosis, and also the different results obtained.

In Germany, they thought only of destroying the bacillus of Koch, or, at least, of preventing its contaminating the human organism. But the measures taken in pursuit of that idea, isolation and disinfection, did not, indeed, as the compared figures of

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Read at the fiftieth annual meeting of the Association, Quebec, June, 1919.

mortality show, produce as good results as did, in England, the measures taken long ago to better the conditions and the individual. Those were the sanitation of dwellings, cleaning of cities, inspection of food, and so forth.

However, for all that, the special prophylaxy of contagion also belongs to hygiene. But, far from being the most important, it is only the eventual complement of the other sanitary precautions, whose protective effect is more far-reaching and which must always be tried as a means of prevention.

The hygiene inspector, therefore, cannot but devote himself to that fight against tuberculosis which of late has taken fortunately a new impetus in this province. He has to follow the example set by the public authorities in our province, whose generous attention deserves nothing but praise.

Let me mention the fact that the provincial government and the municipal authorities in the city of Quebec have just contributed a very substantial sum for the erection and maintenance of the Laval Hospital for tuberculous patients.

The citizens of Quebec also showed the deep interest they were taking in the question by subscribing the magnificent sum of $150,000 towards the same purpose.

I may add also that the provincial government is happy to profit by the Federal loan of twenty-five millions for housing purposes, and has already organized in the most practical and effective way, in order to abolish one of the main causes responsible for contamination and the spread of tuberculosis. A campaign is under way, under a competent director, to incite every town and city to take advantage of the generosity of the Federal Government, and begin building sanitary dwellings.

Public opinion, in a word, is now awakening and favors a methodical fight against the white plague, as we call it.

Never, as you see, was the time so ripe to engage in that fight on a broad basis, and never also was the need so pressing. For we must not forget that war trials and privations are bound to spread abroad the terrible sickness.

And again, I repeat, the hygiene inspector has a most important part to play in this organized fight; he cannot flinch, nor hesitate before this which I may call his main duty.

Bearing these thoughts in my mind, and being moreover long possessed with a conviction acquired through my connection with the antituberculosis dispensary of Quebec, of which I was the head for many years, I happened to become hygiene inspector for

the district of Fraserville. I could not then feel differently and, quite naturally I wanted my conviction to prevail.

The best and surely the most effective means of fighting the white plague, as it appeared to me after my experience of ten years, was the formation of a league.

I was, of course, also relying on the finding of the Royal Commission appointed by the present government for the prevention of tuberculosis, whose report plainly said that "the leagues against tuberculosis were one of the best means of fighting the sickness".

Being invited therefore to a meeting of the Medical association in Fraserville, in January, 1918, I took this opportunity before the physicians of the county of Temiscouata who were there assembled, of expounding, after my own experience in Quebec the valuable advantages and the foremost utility of a league against tuberculosis.

My suggestions were received with interest and good-will, and through the authority and prestige of men like Dr. Dubé, of Notre-Dame-du-Lac, and Dr. Parrot, the local member, as well as the enthusiasm of other highly public spirited confrères, they soon materialized. In fact as early as July, 1918, the league was formed and its birth was solemnized in a most fitting way.

Some remarkable speeches were pronounced on that occasion by Dr. L. F. Dubé, Dr. Arthur Rousseau, of Quebec, the late Dr. Fremont, Dr. O. Leclerc, and also Dr. Jarry, of Montreal. All those speeches, in which were found clear principles and golden words of advice, were published in a booklet.

And the inspector for Fraserville was glad indeed in a foreword to that booklet, to congratulate the League upon its publication and declare it to be a praiseworthy and most useful contribution to the fight against tuberculosis.

In fact, as one of the speakers had said: "It is most important that the antituberculosis education of the people should be made, that its attention be kept awakened, and especially that everyone should learn a wise habit of caution, and carefulness." An unceasing work of propaganda is wanted for that purpose, and I should think this substantial booklet a most happy form of it.

People were attracted by the authority of the names of the speakers, as well as by the human interest of the information contained in their lectures, and they read and are still reading the booklet. And so the principle obtains, which was uttered by Dr. Dubé, viz.: "It is necessary, before anything else, to conquer opinion, to circulate amongst all classes of society, in every house,

the clear and brief notions which will enable anyone to preserve himself and his family."

The provincial government, showing wisdom and intelligence, bought a thousand copies of that booklet which were distributed freely throughout the country.

This was the beginning of the movement. The mind of the public was attracted and prepared. So that it was easy to impress it more, when the antituberculosis exhibition of the "*Conseil Supèrieur d'Hygiéne*" of the province was exhibited, for a week, whilst a Farmers' Convention was on.

And here follows, in simple words, the story of what was done in Temiscouata; and, before going any further, let me remind you that all was accomplished in a sort of miraculous way without any money or any funds whatever.

"The first public action of the league was to inaugurate a 'clean-up week' throughout the country. And by a logical and progressive process, the movement was first explained in two articles which appeared in the local paper, the *St-Laurent*. The curate and the mayor of each parish received a card requesting him to help in every way in the movement, by explaining it to their people and urging them to fall into line on the set date.

The municipal councils were also asked to adopt a cleaning up by-law, following the line of the one adopted by the municipal council of Notre-Dame-du Lac.

Then, in order to spread widely certain notions of hygiene, the league took the initiative of publishing a "*Clean-up Bulletin.*"

It contained a very striking appeal, urging not only the humanitarian advantage of preserving health and saving the young lives, but also the financial advantage of cleaning up. "It is proved and recognized," said the appeal in part, "that 60 per cent. of the fires are due to accumulated waste in the dirt left around the buildings, or the lack of care inside houses."

It was also pointed out that insanitary surroundings breeds diseases and is mostly responsible for the high proportion of infant mortality. And so on.

The *Bulletin* urged everyone to co-operate.

"The community," it said, "is to a certain extent responsible for the health of the individual; but the individual is no less responsible for the health of the community.

"Co-operation between the two is essential, but how to do this effectively is no less essential.

"Let church groups and clubs, school clubs, boy scouts and

all other associations assume leadership for a clean-up campaign in specified districts.

"So boys and girls, fathers and mothers, get ready, and be out with the water and soap, the broom and mop, the rake and hoe, and give your homes and yards a great spring cleaning.

"It is a good thing to be ready, when the time comes, for both front and flank movements on the citadels of dirt, dust and disease."

And, in fact, the greater part of the population went to it, with a war-like spirit, and made a clean job of it. The "clean-up" week met with a fairly great success.

It must be said that the municipal councils entered the movement very earnestly, for which they deserve the greatest recognition and praise. The councils, as well as some industrial railway companies, bought copies of this "*Clean-up Bulletin*," which were sold at $10.00 a hundred, and then distributed them at large.

The physicians of the county also showed a praiseworthy disposition, and most of them also bought a few copies of the *Bulletin* which they distributed freely to their clients. This was the only source of revenue the league ever had.

On Sunday, May 18th, every parish priest explained from the pulpit the purposes and advantages of a clean-up week, asking all his people to take a hand in it.

A few physicians also throughout the county gave on the same day one or two lectures on the same subject. One after mass, and the other usually after the evening service.

So that, everywhere, the people were properly appealed to and were quite willing to clean up according to the programme which had been printed in the *Bulletin*.

On Monday, they were directed to put everything in order, Carelesslness, they were told, is responsible for most of the fires and the loss of so many thousand dollars.

On Tuesday, they were asked to take away all waste and burn it. Also clean the carpet, clean the cellar, clean everywhere, using freely water and soap.

On Wednesday, they were supposed to clean and adorn the surroundings of their homes, their schools and the church as well. Also to undertake the sowing of grass and trees, and in a word, the surroundings of the buildings and the roads with green.

Thursday was reserved for the turning of the useless and often dirty yards into vegetable gardens. They were also, on that day, asked to repair the fences and paint them anew.

Friday was a day of painting and decorating. It wound up,

on Saturday, with an urgent and most serious appeal to do something, in order to help, and make that fearful percentage of 20 per cent. of children, who die before they are one year of age, decrease. They were reminded that neglecting to keep the children clean and giving them bad food is worse than murder.

This was the course followed by mostly everyone and it certainly had a most happy and complete result. Of course, it is too early yet to give you any figures showing that sicknesses have decreased in number and in seriousness, but I am proud to say that the hygienic conditions in Temiscouata, which is part of my district, are now progressing and that the health of the people has increased accordingly.

But this was not the only satisfaction I received through this movement. I can already see that the neighbouring counties have been impressed by what was done in Temiscouata and they think now, not only of taking the same precautions, but moreover, of forming leagues, too, to fight against tuberculosis.

And I can foresee that the two counties of Rimouski and Montmagny at least, will soon have theirs.

Of course, you may know that the forming of such a league is not always an easy task. Forming a league is always a hard task. Anyhow, I would add that it is quite useless to try and form an anti-tuberculosis league in a county where there is no medical association already constituted.

This is the first logical step to enter into, for the hygiene inspector can rely on no one but the physicians of the county first of all.

Through the medical association of which he soon becomes a member the hygiene inspector can get in touch with the physicians of the county and secure, as was my good fortune in Temiscouata, their good-will and their co-operation. It might be a slow process, and take as long as for the "league of nations", but it is worth trying as in this case, in view of the magnitude of the results to be obtained.

The league aims, in the future, at the continuation and development of its action in a methodical and progressive way. This action will henceforth be centered about three main evils: flies, spitting on the floor, and unhealthy dwelling houses.

It is most important, of course, that the propaganda should at the same time be kept on systematically through lectures, and appropriate literature and publications. But the first need is of money, and the intention is to incite everyone in the county to

become a member of the league and subscribe a yearly fee of one dollar. This will allow the fight against tuberculosis to be pursued and even perfected by the establishment of a dispensary for instance, which I hope will soon be.

Again, I repeat, too great praise cannot be expressed for the earnestness displayed in the county of Temiscouata, which bears also its good effects upon the neighbouring counties, in this a truly humane and patriotic work for which generations to come will ever be grateful.

It has long been taken for granted that any physician is competent to give sanitary advice, and to head a health department, but in point of fact there is not one practitioner of medicine in five hundred who knows more than the rudiments of modern sanitation. The education, training, habits of thought and objects of work of a good physician are very different from those of an ideal public health executive. There is less in common between the ordinary medical practitioner's work and that of the public health worker than there is between either and the practice of dentistry. Professor Milton J. Rosenau, formerly director of the Hygienic Laboratory of the Public Health Service, and now the head of the Public Health School of Harvard University makes the following statements:

"Hygiene is included as a major subject in the curriculum of only three medical schools in the United States. . . . It has become necessary to establish special schools with graded courses to meet the demand of training men to become public health officers. It is slowly becoming recognized that the training received for the M.D. degrees, even in our best medical schools, does not properly fit a man to enter public health work. Sanitation and hygiene has become a separate profession."

The course of four years of study in a leading medical school comprises approximately 4,000 hours of work. The entire course in anatomy, as far as it applies to the work of a health officer, could be given in one hundred hours. We find then that out of the 4,000 hours of a medical course only 1,308 have special value for the public health worker. It would therefore be wise for cities and municipalities to appoint only doctors to those positions who have done special post-graduate work along these lines.

TUBERCULOSIS HOSPITALS AND DISPENSARIES

By H. A. Farris, M.D.

St. John, N.B.

IN the past, sanitarium treatment has been considered the all important part of the treatment of tuberculosis, and this must continue so for the middle classes. It has proved, however, highly unsatisfactory for the charity cases; while the temporary results have been satisfactory, the permanent results have not been commensurate with the cost, nor have home conditions been improved. In addition to this, a patient who has left a miserable home to live in a modern sanitarium for a few months, returns to find himself unhappy in his old surroundings, yet not in a position to better them. As a result he became a chronic neurasthenic, or returns to old conditions of living and work usually with a relapse. It seems now as if the time had come when great emphasis must be laid on home treatment for the charity cases, and this be accomplished by means of local hospitals and dispensaries as aids. Pratt, of Boston, has proved beyond question the splendid results that may be obtained at home, even under adverse conditions.

It is now generally recognized that infection is almost universal, and that we can probably accomplish more by improved home conditions, and by keeping up bodily resistance, than by spending large sums attempting to eliminate only infection. This does not mean that we ought not to pay attention to infection, but rather that we should lay most stress on keeping up resistance, and at the same time educating the patients and families how to prevent infection. Isolation of all bacilli carriers, and sanitarium treatment of all early cases, is needless and impracticable, but adequate hospitals and dispensaries must be established to make home treatment a success.

While there is much agitation, especially in the United States, for local tuberculosis hospitals, it has been chiefly for hospitals for advanced cases, and the greater the mortality the better pleased have the administrators been, as it proved to them that the right class of cases had been admitted. My experience, however, has

been quite contrary to this. It seems as if the hospital's first purpose be hospital treatment for any case needing such treatment. This would mean, of course, that the sicker the patient the more preference would be given him, but any case with acute symptoms should be admitted. This does not mean that these patients should be kept indefinitely, but as soon as they have improved sufficiently to continue home treatment, they should be discharged to their own homes under the supervision of the dispensary, unless there are special reasons for keeping individual patients in the institution for longer periods. Such patients on returning home will have learned the treatment and also what tuberculosis means.

While isolation has been considered the all important work of a hospital, this should be secondary. The hospital undoubtedly should be used for isolation of those cases who are extremely careless, or who are living among children under such conditions, as to make them a menace to the children. There should be a law by which any such patient could be compelled to enter a hospital, if he would not do so voluntarily. The less, however, this law has to be enforced the better for the tuberculosis work. The hospital should establish a reputation, whereby most patients will be only too glad to avail themselves of its privileges. and under proper supervision of home treatment compulsory isolation will rarely be needed. That a patient has bacilli in his sputum, does not mean he cannot be treated at home with safety to those about him.

A hospital should provide facilities for differential diagnosis. In few other diseases is diagnosis so time-consuming and expensive as in that of many cases of tuberculosis, and even in hospitals for advanced tuberculosis autopsies have shown that about ten per cent. are not tuberculous.

The hospital should put such diagnosis within reach of all classes; relieve the general practitioner of this class of free work, and also make the dispensary much more efficient, as the dispensary has not opportunity for observation or equipment for a complete diagnosis in doubtful cases. A patient sent to a local tuberculosis hospital for a period of observation does not seem to have the same stigma attached to him as has the one sent to a distant sanitarium.

The educational factor of the hospital must be considered highly important; it teaches friends and relatives how a patient should be cared for both for his own and relatives' good. My experience has been that this has probably been one of the most

important functions of the hospital, and even the local medical men have profited much from it. Every courtesy should be extended to visitors so as to get their sympathy with the work, and it is remarkable how much may be gained by a little extra attention to visitors. Lectures should be given to the patients and staff.

These hospitals should be affiliated with general hospitals, so that nurses from these hospitals should get at least three months' training in tuberculosis work. It is unfortunate that nurses trained in general hospitals know little or nothing of tuberculosis. If such ignorance of tuberculosis exists among those who are supposed to have such medical training as nurses, how can we blame the general public for being in ignorance of the treatment and dangers of tuberculosis?

The hospital should not be considered a place for chronic cases, who do not require active care or attention. Those who cannot be further helped by hospital treatment, yet may live for years and for practical purposes are homeless, should be sent to a municipal home kept for this purpose alone. Such a home could be most inexpensively run, yet provide the rest, food, and fresh air needed for their comfort. A resident nurse could be in charge of such a home, or the dispensary nurse could visit regularly, and any patient with acute symptoms requiring nursing care, should be sent to the hospital. The size of such a home possibly could be estimated at about one bed for every six or seven deaths per year. This estimate is based on an estimate made by looking over the chronic cases we have had to keep in St. John County Hospital for the past three and a half years.

Thus, by making the hospital a place for diagnosis, active treatment and education, it becomes very evident that the staff must be competent, and that the equipment must be most modern and complete. No tuberculosis hospital should be without a complete *x*-ray equipment. It should be provided with an operating room, facilities for giving sunlight treatment, either by natural or artificial means, pneumothorax treatment, tuberculin treatment, proper sterilizers, well equipped nose and throat room, and a dental room. The latter I believe is most important, and I think it can be arranged with the local dentists in most cities to provide attendants for such clinics. It should be unnecessary to mention the need of adequate porches for all patients.

The size of the hospitals is very important. In the United States it is advocated that at least one bed for every death per year, or better, two beds for each death, be provided. I believe,

however, that this size is not necessary if the proper dispensary facilities and home for chronics be provided. It seems that about one bed for every two deaths can be made adequate, if part of the amount that is saved by this be expended on the work in the dispensary and home for chronic cases, and much better results will be obtained. Needless to say, such hospitals will give a high *per capita* cost, certainly over $2.25 per day with the present cost of living, so that every bed that can be saved means much.

The expense of such tuberculosis hospitals should probably be borne in equal proportions by the provincial and municipal governments. Later, the Dominion Government will probably give some aid. At present, with the idea that hospitals are places of isolation and death, the municipalities bear practically all expense.

The location of tuberculosis hospitals is most important. They should be located very near a large centre, preferably on a street railway, but ample grounds must be provided. Unlike a sanitarium, which is better far removed from centres, a hospital gains much by being easily accessible.

The climate is of practically no importance. In St. John, which is considered probably the worst climate possible for such treatment, I can see no difference in the results from those in some of the much vaunted health resorts. Patients who have been sent home from other resorts to die, have made remarkable improvement on their return home to the St. John climate, and the same result having been secured in a so-called good climate, the climate would have been given the credit where the mental condition was the real cause. The good climate is where the patient is comfortable and contented and has proper care.

The dispensary must be the all-important factor in the home treatment of tuberculosis. The hospital really should be an adjunct of the dispensary, but no dispensary can be a success without the hospital as an aid. The dispensary must also have at its disposal open-air schools and day camps as well as the home for chronics mentioned above. The location of the dispensary should be central and easily reached. If the tuberculosis hospital happens to be so located, it would be ideal to have the dispensary in the same building. There are some advantages in having the tuberculosis dispensary located at a general hospital as there are so many other diseases to eliminate; the other immediate dispensaries can be used in making a differential diagnosis.

The all important thing in the dispensary is to have a physician or physicians sufficiently interested and sufficiently trained. He

should be in a position to attend at least two day clinics and two night clinics a week. It seems as if one nurse to every twenty thousand population is essential. It should be the duty of the nurses to keep accurate data of all patients, to visit regularly in their homes, to do any actual nursing that is needed, and to visit frequently enough to keep the patients under strict control. The success of such treatment will depend on the enthusiasm and training of such nurses, and it will only be by everlastingly keeping after them that patients will be kept taking proper care and rest at home. The rest with home treatment must be much more strict than in institutions where some latitude may be permitted owing to constant supervision.

By having these patients nursed in their own homes, such nursing will gradually reform the home conditions and not only will the immediate patient be benefited, but the family as well will have been under supervision for early symptoms of tuberculosis or poor health. The nurse should gather all suspect cases into the clinics and have them regularly examined. Needless to say, a patient convalescing under such conditions will have much greater chances of remaining well.

There must be great co-operation with the board of health.

In addition to free diagnosis and supervision of home treatment, the educational factor of a dispensary should be a most important one. This should be accomplished by literature, bulletins, lectures, publicity campaigns, etc. It should be the duty also of the dispensary to provide medicine, absolutely essential food, clothing, and even crude porches or chairs needed. With school inspection now becoming universal, the need of open air schools can be easily recognized. These schools should also be under supervision of the dispensary nurses, and would add little to the cost of ordinary schools. Day camps should be provided, as these in many places have given splendid results at a minimum expense.

The expense of providing the dispensary should be borne by the municipality. This should include pay for the rooms, staff, medicines and absolute necessities. Extra food, porches, chairs, etc., should be provided by private funds. I think it is very important in this work that we keep the public interested by making it necessary for them to provide some of the finances needed, and by getting them interested in home conditions. We are doing a great work. It is only by educating the public to the need of improved home conditions that we can hope to go far in this work.

SOME DANGER SIGNALS IN CARDIOVASCULAR DISEASE

By James Third, M.D.

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I HAVE no epochal discovery to announce, no theories to advance and none to defend. I simply bring to your notice a half-dozen clinical observations that seem to me worthy of your consideration. I confess at once to some measure of scepticism towards all things traditional. In these days we take too much for granted. Too often we judge of the seaworthiness of a ship from the appearance of her upper decks. Not infrequently, when the self-same ship is ordered to the dry-dock, the bottom is found to be wholly unworthy of its glittering superstructure. It is well perhaps that we should systematically and regularly bring our theories and our practices into the dry-dock and subject the supporting fabric to a careful examination.

Prognosis is visualizing the future with such knowledge as we have at hand to-day. No part of our science or our art is more difficult, and none more important, or more comprehensive, since prognosis includes both diagnosis and treatment. Moreover, prognosis is not dependent on the condition of any one organ, but on the functional activity of all the organs, and especially of those more or less closely related, physiologically, to the one called upon to bear the brunt of action. Prognosis, in a word, depends on a general survey of the whole physical and psychic condition of the patient.

No tissue lives to itself or entirely by its own endeavour. Each contributes its share to the sum total of human effort. This contribution may be in the nature of an enzyme to move up a step the metabolic process, of a hormone to actuate a distant secretion, or of a neural impulse to energize a sleeping muscle, or control some vital protoplasmic activity, but throughout all there is the same undying principle—interdependence, interdependence, not

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Read at the fiftieth annual meeting of the Canadian Medical Association, Quebec, June, 1919.

alone in the processes of the tissue's development, but in all its functions, the purpose of its being.

In distress, each organ speaks to us in a language all its own. This language, we must interpret; nor does our task end here. Too often there is a jargon of voices, as if the ear were at some rural telephone; but this, too, we must decipher. The task is by no means so difficult as it would appear at first sight. How often have we puzzled our brains over a Latin sentence until our eyes rested on a noun or verb that we recognized, when all at once the mists seemed to lift. So it is in the prognosis of cardiovascular affections. There are a few outstanding signs and symptoms that spell danger, and when we recognize these the meaning of all the others can be worked out and the whole disability fairly assessed.

Myocardial degeneration, if we exclude that due to acute infections, is not likely to be present before middle life. Arteriosclerosis is an expression of age—age as told by years of normal life or by days of stress and strain. Failure of compensation, or better—heart-failure with congestion—is always the result of myocardial change. The dictum of Graham Steell[1], that "no one dies from mitral regurgitation", may, with little variation, be applied to any of the chronic valvular lesions. All, in the final analysis, depends on the condition of the myocardium. The only two lesions of the valves of the left heart that call for special attention, are aortic regurgitation and developed mitral stenosis, and the prognostic significance here rests not on the condition of the cusps, but on the fact that these lesions signalize the invasion by the morbid process of the heart muscle itself. When the strain on the cardiac muscle goes beyond its physiolgical capacity, then no matter what may be the condition of the valves, the heart as a whole is forced to run up a signal of distress. The first signal is usually breathlessness.

Men, like plants, get a great deal of their nourishment from the air.

It is extremely difficult to analyze the fundamental cause of breathlessness. Physiologists tell us that changes in the respiratory rate are due largely to alterations in the stimuli reaching the respiratory centre. Increased concentration of the H-ions in the blood- acidosis- is undoubtedly the most frequent, but not the only cause of breathlessness. There are two acid groups—the volatile and the non-volatile. The entrance of these into the circulation would soon render the blood acid, were it not for the provision made for their prompt excretion, the CO_2 by the lungs,

the others by the kidneys. Anything, therefore, that causes overproduction of these acids, or interferes with their free elimination, will tend to cause breathlessness. Another possible cause of breathlessness in cardiac cases is diminished vital capacity of the lungs—loss of alveolar space.

Peabody and Wentworth[2] have shown in a series of interesting experiments the relation of the vital capacity of the lungs to breathlessness, and other signs of decompensation. In Group I of their series consisting of twenty-five cardiac patients, the vital capacity was 90 per cent. of the normal. All had well compensated hearts. None of them showed any evidence of what might be termed breathlessness. Group II consisted of forty-one cases whose vital capacity was between 70 and 90 per cent. of normal. All of these gave a history of breathlessness on any unusual effort. Group III consisted of sixty-seven patients with a vital capacity ranging from 40 to 70 per cent. of the normal. All of these suffered from breathlessness on moderate exertion. Group IV consisted of twenty-three cases with a vital capacity of 40 per cent. or less. In all of this group breathlessness was a marked symptom even during rest.

Just why these patients with symptoms of decompensation should show decreased vital capacity is not quite clear. Peabody lends support to the theory that low vital capacity depends on a loss of elasticity of the lung tissue, brought about by engorgement of the pulmonary circulation due to back-pressure from a weakened left heart. There is some clinical evidence to support this theory, in the fact that disease of the mitral valves brings in its train, breathlessness at a much earlier stage than that of the aortic valves. Further investigation is needed, but whatever may turn out to be the fundamental cause, the fact remains, that breathlessness is probably the most important subjective symptom of cardiac disease. Then it should be remembered that breathlessness of purely cardiac origin is always accompanied by a general cyanosis. Lewis[3] lays special stress on this point.

It would be an error, however, to conclude that no form of heart disease exists when this symptom is absent. In the early stages of both mitral stenosis and aortic disease, breathlessness is usually absent, and appears only as a definite symptom when the disease has invaded the myocardium.

The heart quickens and the respiratory rate increases in all of us, young or old, as a result of any unusual experience or effort, but the causal influences are transitory, and a rest of one or at most, two minutes, if the myocardium is reasonably sound, will

restore the normal rate in both. A slow return of pulse-rate should be the subject of careful enquiry. The value of the exercise tests in deciding the measure of cardiac efficiency cannot be over-estimated.

If we exclude the breathlessness of the neuroses, the severe anæmias, lung disease, acute infections, and intrathoracic growths, then the degree of breathlessness especially in a man past mid-day, is a fair measure of the cardiac inefficiency.

All the organs of our body have, in addition to their current account, a reserve fund. Thus, we have a cardiac reserve, a pulmonary reserve and a renal reserve. Exhaustion of any or all will cause breathlessness of an extreme degree, and a fatal issue. This we see in the heart case, bolstered up in bed, with distended veins, swollen legs and an engorged liver.

Then we have the man of sedentary habits of say fifty-five or sixty, who begins to complain of breathlessness on an easy grade, or on the stairs. We may safely infer that his cardiac reserve is diminished probably 20 to 30 per cent., and it becomes our duty to conserve his energy and to search for the cause of the overdraft.

Again, we have the patient who is short of breath even while walking slowly on the level. His cardiac reserve is greatly diminished—is in fact well nigh the vanishing point. In these cases the history may reveal the fact that the onset was gradual, and that the disease had actually been in existence for months or even years.

The so-called "cardiac asthma" is always a serious affection, The attack resembles ordinary bronchial asthma, and comes on about two or three o'clock in the morning. The condition occurs most frequently in elderly people with myocardial degeneration, high blood-pressure, and sclerotic arteries. If accompanied with angina or alternating pulse, the patient will not likely live more than a few months.

True angina is no less serious. It is a signal of some degree of heart exhaustion. It may be interpreted as too much work, too much worry or a lengthening of the shadows. The patient with typical angina is at least sixty-five, no matter what the calendar may show. In an obese patient, free from syphilitic taint, without much cardiac enlargement, and with only a moderate increase in pressure, the prognosis is somewhat better, providing he will reduce his weight to the normal for his years and height, and agree henceforth to live down to his heart level.

We next seek confirmation of our diagnosis by physical examination of the chest. It is generally agreed by both clinicians and

pathologists that if there is serious myocardial change—change sufficient to produce symptoms—enlargement of the heart will be found. Now enlargement of the heart may be due to either hypertrophy or dilatation, or to a combination of the two. In the chronic cases at least, it is likely to owe its existence to the combined lesion.

The simplest and best guide to the size of the heart is the position of the apex. If the maximum apical impulse with the patient fairly on his back, is in the fifth inter-space and within from three to four and one-half inches of the mid-line, the distance varying according to the weight and skeletal development of the patient, and providing, too, the heart is not displaced, then there is no ventricular enlargement worthy of consideration.

I have often observed, and with some amusement, the ease with which students, who knew the surface markings of the heart delimited by percussion, its borders, and the difficulty experienced by others, with quite as sensitive an ear, and an equal training in percussion, but without any knowledge of the surface markings. The fact is, most of us, unconsciously perhaps, keep our eye on the apex and the nipple in percussing for the left border, and on the margin of the sternum when endeavouring to locate the right.

Quite frequently, I find on history sheets under the heading physical examination, "Heart enlarged to right, 1 cm." or "Heart enlarged to the left, 1 cm." Well, I confess that this is a refinement of diagnosis with which I am not familiar. I know of no method of making a physical examination of the heart in the living subject that will give such precise results. By the *x*-ray, orthodiagraphic method[4], the size of the heart can be made out, but even here I should not like to say the error was much below 1 centimetre.

If any of you will take the trouble to watch the movements of the normal heart for a few minutes as silhouetted on the screen, you will, I think, agree with me, that diagnosis of an enlargement of 1 cm. by physical examination is a physical impossibility. Thousands of *x*-ray examinations by the orthodiagraphic method have justified the statement of the older clinicians, that, if the apex is in the normal position, there is no pathological ventricular enlargement.

Heart murmurs. Murmurs alone have little prognostic significance. The most frequent apical murmur is the so-called cardio-respiratory. Opinions differ as to its cause. It is heard best at the apex, but it may be heard over a wide area of the precordium, and occasionally even at the angle of the scapula. It is a short high-pitched systolic murmur, most audible during inspiration.

It occurs usually in the nervous. If, after a deep inspiration, the breath is held, the murmur in 99 per cent. of the cases is lost, and for this reason, is regarded as exocardial. It has no prognostic significance.

A systolic murmur heard at the apex, transmitted to the axilla, with accentuation of the second pulmonic, in a patient who has had a definite attack of rheumatic fever is most likely of organic origin. Even with this, however, if the heart is not enlarged, and the patient has good exercise tolerance, then, from the standpoint of prognosis, it may be disregarded.

Mitral stenosis is usually, but not always, a serious condition. All histories must be accepted with caution. The unwilling recruit wishes to show that his heart is defective, the applicant for insurance, that his heart is sound. Leaving these two out of consideration, there is still a considerable class without "axes to grind". In these the history may be our best guide as to the gravity of the lesion. Mitral stenosis in the young accompanied by presystolic and mid-diastolic murmurs, and a definite thrill, is always a serious condition. The interval elapsing between the rheumatic or choreic attack, and the development of the pre-systolic murmur is often a valuable guide to prognosis—the shorter the interval, the more grave the prognosis and vice-versa. In a man of say forty-five, who had his only attack of rheumatic fever in childhood, and who has at present but a slight presystolic murmur, we may safely infer that the rate of stenosis is very slow, or that the process is absolutely stationary. In either case the patient will probably live out his expectation. In the progressive lesions, auricular fibrillation usually ends the scene. With the onset of this abnormal rhythm, there is always a sudden development of breathlessness.

Aortic disease is attributable to rheumatism or chorea in about half our cases. Syphilis and arterio-sclerosis claim the remaining half. "After puberty the endocarditic variety of aortic insufficiency is consistent with good heart health for years, because the valve changes are not necessarily progressive, the aortic root is not involved, and the coronary arteries, orifices, and stems are free. On the other hand, the degenerative form, usually syphilitic (and the war has taught us how common is the variety), is always serious, because the sclerosis is progressive, the root of the aorta is involved, and the coronary arteries, orifices and branches, one or other, or both are attacked. These vessels control the prognosis; if involved, as they may be at the sinuses of Valsalva alone, the heart muscle cannot be healthy."

Let us next consider briefly the much overwrought question of blood-pressure. The instrument dealers are not the only sinners. The value of the sphygmomanometer in diagnosis and prognosis is great, but not as great as some would have us believe. Blood-pressure alone should never be taken as a basis for either diagnosis, prognosis or treatment. It should always be considered in relation to the state of the arteries, the size and exercise tolerance of the heart, and the condition of the kidneys.

In doubtful cases it is best to estimate the blood-pressure, systolic and diastolic, several times by the auditory method, and take the average. A systolic pressure constantly over 160 with a diastolic of 120 in a man under sixty years of age, calls for a thorough investigation of the whole cardio-vascular-renal system. The patient is probably in the early stages of an interstitial nephritis. If the diastolic pressure is constantly under 100, the systolic reading should not be taken too seriously. Emotion, etc., will send the systolic up but has little or no effect on the diastolic. Most patients of sixty-five years who have a diastolic pressure constantly in the neighbourhood of 160 mm. Hg., will have a hæmorrhage into the vitreous or perhaps into the internal capsule within a year.

In wasting diseases where the exercise tests cannot be given, the blood-pressure estimation may be a valuable guide to prognosis. Patients suffering from typhoid show an excessively low systolic pressure[6]—the average being between 80 and 90. The diastolic in these cases usually lies between 65 and 70. The more closely the systolic and the diastolic approach, the more unfavourable the prognosis. It should be remembered that if the arteries are markedly sclerosed, the blood-pressure readings should not be taken as a guide to either prognosis or treatment.

The Renal condition. Renal affections are attracting a great deal of attention at the present time. The recent experimental work of Bradford, Wilson and Bashford[7] on "filter-passers", bids fair to revolutionize many of our ideas with regard to the etiology, prognosis and treatment of, not only renal, but many other diseases. We shall await with hope further confirmation of their work. In the meantime we can but discuss the subject with such light as we have.

In all patients with high blood-pressure, the urine should be examined carefully. It is well to have day and night specimens collected separately. A patient who suffers from nycturia and who passes more than 400 c.c. during his resting hours, unless there is sufficient cause, *e.g.*, greater intake of fluids, has probably some

interstitial nephritis. A specific gravity that shows little or no fluctuation during the twenty-four hours points to the same conclusion. I have frequently found a trace of albumin with granular casts in a double centrifuged specimen where neither were found otherwise. In double centrifuging I fill both tubes with urine and let the centrifuge run for the usual period. I then pipette out the lower half of contents of both tubes and put them into a third. This is centrifuged again from three to five minutes with water in the balance. The precipitate is then examined in the usual way.

Another test I should like to mention and one, too, quite within the range of the general practitioner. I refer to the functional renal test of Geraghty and Rowntree.[8] Its great value in prognosis in nephritis cases is now fully established. I know of no other test, so easy of application, that will reveal with the same degree of certainty, the functional derangements of the kidneys. Normally from 40 to 50 per cent. of the phenol-sulphonephthalein is excreted in the first hour and fifteen minutes, 15 to 20 per cent. in the second hour and 10 per cent. or less during the third hour. Some nephritic cases may eliminate but 25 or even 10 per cent in the three hours and a quarter. In an analysis of my cases, I find patients with high pressure, diminished urine, but increased albumin and casts, who are excreting 25 per cent., live from three to four months, while those under the same conditions excreting only 10 per cent. live but three or four weeks.

BIBLIOGRAPHY

1. MacKenzie.—"Diagnosis and Treatment of Heart Affections."
2. Peabody and Wentworth.—The Harvey Lectures, 1916-1917.
3. Lewis.—"The Soldiers' Heart and the Effort Syndrome," 1918.
4. Lewis.—*Ibid.*
5. Osler.—*British Medical Journal*, January 11th, 1919.
6. *Quarterly Journal of Medicine*, July, 1918.
7. Wilson and Bashford.—*Br. Med. Journal*, May 17th, 1919.
8. Geraghty and Rowntree.—*Journal. Pharm. and Exp. Therapeutics*, July, 1910.

Editorial

THE ADDRESS IN MEDICINE

THE present time is rich in centenary anniversaries, for the end of the first quarter of the nineteenth century was an epoch-making period. Peace reigned again in Europe, and the generations who had lived through the French Revolution and the Napoleonic wars were as rich in great men as the day was in great events. In England, and still more in France, the Hippocratic methods of exact clinical observation and the study of pathological anatomy had come into their own, and had together given birth to the great modern science of clinical medicine. With the combination of Bichat and Dupuytren, Corvisart and Laennec, the great day of French medicine had dawned, and the formation of modern clinical methods, in which detailed bedside observations are compared with the results of autopsy, had been formally established.

No more timely subject could have been selected for the Address in Medicine than the life of the great Master of the art of Physical Diagnosis, whose "Treatise on Mediate Auscultation" was published just one hundred years ago. There is no greater inspiration than the so-called biographical motive, obtained through the knowledge of great men. This applies as truly in the art and science of medicine as elsewhere, and the lives of the great physicians of the past should be familiar ground to the practitioner, and his knowledge of them at least as intimate as that of his drugs. Dr. Thayer's vivid presentment of Laennec's life is valuable in just this way. The personality of the man is before us, and the analysis of his life shows clearly those qualities of industry,

accuracy of observation and enthusiasm for fact, on which, with the simplicity and acuteness of genius, he laid the foundation of the remarkable knowledge which he gained of diseases of the respiratory tract. His early struggle against adverse circumstances and selection of the best conditions for his work, his youthful association with the great pathologist Bichat and his own important contributions to pathological anatomy, his close study of the writings of Hippocrates, whose principles as applied to the Practice of Medicine it is interesting to note, formed the subject of his graduation thesis; his successful combat of the quackery of his day, and last but not least, his sympathy for the Breton poor, reveal themselves as the hallmarks of one of the great clinicians of all time. They are the background of a life in which his great discovery of mediate auscultation seemed but a link in the logical sequence of events, and the wonderful extent to which he used it in the enunciation and definition of respiratory phenomena was the natural outcome of an adequate rendering of his daily task by a master workman.

Emphasis is well laid in the Address on the fact that Laennec brought our knowledge both of the pathological anatomy and the physical diagnosis of respiratory diseases to a point to which practically nothing has been added in modern times; and also that, amidst the great advances in laboratory procedures to-day, too much stress cannot be laid on the importance of an exact knowledge and a conscientious reading of what may be called the alphabet of diagnosis, that is, the physical signs presented by the patient and the underlying pathological condition, in the translation of which Laennec may be called our first and greatest apostle. The same danger that assails the therapeutist in availing himself of the vade-mecums of pharmacy is with us to-day in the use of laboratory tests as replacing, instead of simply confirming, bedside observation and experience.

Canada is still a young country, and for that reason the historic sense may be said to be but just awakening among us.

This has received a great impetus through the War, which has carried our men to distant and more ancient lands, and has aroused us to a knowledge of the patriotism that lies within us all. At this time the study of medical biography in our Universities should receive a much-needed impetus, and the minds of our students be more keenly awakened to the facts of the History of Medicine. Let us hope that the Association may help to point the way in this important matter, and that Dr. Thayer's scholarly Address, which was received with so much interest, may be the forerunner of many other papers on our annual programmes along similar lines, which may make us more intimately aware of our great inheritance from the past, which is at once the pride and the hope of our Profession.

THE ADDRESS IN PUBLIC HEALTH

ALTHOUGH the work done in sanitation during the war has never been criticized to any extent, it is still timely for the public to have the facts placed before it, as was done in Colonel McCullough's address at the Quebec meeting. In many ways it is to be regretted that time did not permit of his giving some of the details of how these excellent results were accomplished. This is necessary, as the general public think many of the recommendations of the health officer are unnecessary and vexatious. It was only accomplished by first educating the higher commands and getting their support, and then by enlisting the help of all ranks from the senior officer to the humblest private.

The remarkable record of losses from disease is all the more creditable when one considers that for nearly four years the armies were stationary in one long line of trenches extending from the North sea to Switzerland. It was only here and there that some slight advance or retirement took place. Between the opposing trenches lay "No Man's Land", where

it was never safe to even gather the dead for burial. In all this area were countless bodies either not buried at all or just merely covered, so that frequently the grave was opened by a succeeding shell.

Of the infectious diseases, measles and mumps caused the greatest annoyance to the authorities in France. This was so much the case that it became necessary to quarantine all reinforcements coming from England before they were allowed to mix with the active battalions. This procedure was justified, as until it was done it was never possible to rid some of the units of these infections.

The announcement that the salvarsan remedies will be available at greatly reduced prices owing to the Ontario Board of Health being granted a license to manufacture them, would indicate that this province is working along the right lines. It is to be hoped that the other provinces will secure these remedies for their population at a price not greater than that secured in Ontario.

THE DEPUTY HEALTH MINISTER

ONE of the many good effects of the great war has been the object lesson it has afforded in the triumph of hygiene and preventive medicine. The restrictions placed upon the army—the lessons enjoined by the medical officer and the district officer—may have been irksome—but no soldier can have been so dense as not to see the results upon himself and those around him, and all interested in the soldier, the whole nation in fact, read eagerly in the daily papers the story of how by inoculation and the detection of carriers one infectious disease after another has been conquered. Thanks therefore to the war, what the Canadian Medical Association and other bodies interested in the well-being of the public

have for long petitioned in vain has at last come to pass, and the Dominion has its Federal Health Department.

A portion of its duties, the control of quarantine and epidemic disease, have hitherto been supervised by the Minister of Agriculture. Other sections, notably matters like maternity and child welfare and the gathering of adequate morbidity and mortality statistics for the whole Dominion will need not a little statesmanship, in order to bring about the co-operation of and the enforcement of common or standard regulations by the different provinces without trespassing upon the autonomy of their provinces.

It is generally believed, as we go to press, that the Hon. Mr. Rowell will be appointed first minister. If the interest shown by him in our overseas hospitals, the care of the soldiers, and his intelligent interest in medical problems may be safely taken as an index, this is an excellent choice.

The Deputy Minister has been appointed in advance from among many well qualified possible holders of the post.

Colonel John McCullough was for long years associated with public health work in the Province of Ontario, first with the Provincial Board of Health, later in addition as Professor of Hygiene in the University of Toronto. In Flanders he rapidly came to the front as a sound and practical field sanitarian. His excellent work as head of the sanitary section of the 1st Canadian Division lead to his being chosen as head of the British Army Committee upon the water supply of the Ypres area, and later, in 1916, as Sanitary Expert and Consultant to the 2nd British Army for the whole Flanders area. He was here so much at home and of such value that it is doubtful whether, both for himself and for the whole British Expeditionary Force it was not a loss and a mistake to recall him to London as Sanitary Expert on the staff of the D.G.M.S. there, for he is better at carrying out work in the field than at the writing of reports in an office. But a big opportunity is now afforded to him and we look forward to his rising to the occasion. Much depends upon him, and if

a genial manner, a bright humour, and intimate knowledge through birth and upbringing of both elements of our people, make for success, he is specially well endowed for the post.

A QUESTION has arisen in New York as to the employment of nurses as anæsthetists. Mr. James Taylor Lewis, counsel for the State Medical Society, urges the restriction of the administration of anæsthetics to licensed physicians and the exclusion of nurses from doing such work during surgical operations.

Mr. Lewis cited the law which prohibits any one without a doctor's license from giving ether, or chloroform, or other poisonous gas to a patient, except when directly and continuously supervised by a physician, and he held that criminal action should be brought to prevent the continuation of this practice in certain hospitals, as not only was the law being violated, but life was endangered.

If it could be shown that nurses, after special training, were competent to administer anæsthetics, then, he contended the law would have to be changed so as to give the nurse the right to do the work under the proper restrictions.

Mr. Lewis recently read a paper on this subject before the Society of Anæsthetics.

THE Western University Medical School has announced that the course of study leading to the degree of M.D. extends through a period of six years with the session of 1919–20, or future sessions, except that matriculants, who postponed the study of Medicine on account of enlistment in the Canadian Expeditionary Forces, may register for a course to be completed in five years.

This decision has been reached in order that the men may not lose too much time due to service in the war.

Toronto and Queen's Universities pursue the same plan. The incoming class this year inaugurates the six-year course, and it is understood that the schedules laid down will be followed in all the Medical Schools through the Province of Ontario.

CENTRES for research is what is being planned in the immediate future for Ontario hospitals. This is in line with the forward movement now progressing throughout the Dominion. By reason of the large number of physicians and nurses who volunteered for their country's service during the period of the war the Medical Hospital Staffs were reduced to a minimum. Recently the Provincial Secretary called together in Conference, all the Ontario Hospital Superintendents. It is the intention to rebuild and strengthen the Staff of Medical Assistants and nurses at the various hospitals, to cope with the ever increasing need for such work, and develop at each the medical and scientific side of hospital life, particularly in research work, thus placing these institutions in the front rank of Medical work as it is understood to-day.

The Ontario Hospital at Whitby, and the fine institution at Guelph was, shortly after war was declared, handed over to the Department of Militia ahd Defense for use as Convalescent Hospitals for returned soldiers.

It is aimed to create in each hospital district a medical centre located at the Ontario Hospital for the particular district which can be regarded from all sides, and particularly by the Medical fraternity, as the one locality where the highest attention will be paid to scientific and professional advancement.

Correspondence

To the Editor of

The Canadian Medical Association Journal:

Sir:—

In your leading editorial of the July issue of the Journal, which discusses the work of the recent meeting of the Canadian Public Health Association, you refer to the venereal disease problem and say that the publicity given the figures showing the prevalence of syphilis in Canada should prove a surprise to most citizens and even to some physicians, and, further, it was stated that at present there are in Canada half a million people suffering from this disease.

I am in full sympathy with the movement that has been launched to attack the venereal disease problem in Canada, which I regard as a grave one, and would assist in every possible way to further its object, but I must protest against the use of statements evidently intended to promote the success of the movement but which are certain, on examination, to have a very different result.

One of these is to the effect that there are, at least, five hundred thousand cases of syphilis in Canada, in other words, that out of every fifteen or sixteen Canadians, one has this disease.

When, now eight years ago, the Royal Society of Medicine, of London, memorialized the Imperial Government to appoint a Royal Commission to consider, and report on, the problem of syphilis as it affected Great Britain and Ireland, it estimated that one half a million people were affected with this disease, an estimate that surprised that portion of the public which gives attention to such matters, and, as I recall, was received with protest in many quarters. As the population of Great Britain and Ireland was, before the war, about forty-seven millions, the estimate would have postulated that one out of every ninety-four inhabitants was so affected. Now, if a little more than one per cent. is an excessive estimate for the prevalence of syphilis in Great Britain and Ireland, where there are large cities and towns with large slum sections in which venereal disease flourishes as it does nowhere else, what must be said of the estimate that over six per cent. of the population of Canada is syphilized?

I will admit, as I know for a fact, that amongst the out-door patients of such hospitals as the Toronto General, the Montreal General and the Royal Victoria, who come chiefly from the slum districts of our cities, or who hail not only from the unfortunate but also from the wastrel class, the proportion of syphilis is large. Indeed, some four or five years ago the application of the Wassermann test to the out-door patients of the Toronto General Hospital indicated that about one out of every twelve patients, or over 8 per cent., was affected with syphilis. Will it be contended, however, that this proportion should be a guide to indicate the prevalence of syphilis in the whole population of Canada? It would be as absurd as if the prevalence of syphilis in Great Britain and Ireland were determined from the prevalence of the disease amongst the out-patients of the great London hospitals, or the prevalence in the United States from the proportion in the out-patients of the hospitals of the larger American cities.

I am firmly of the opinion that such wild estimates of the prevalence of syphilis in Canada are doing the cause of Public Health a great deal of harm. They tend to undermine the confidence of the public in the sincerity of all concerned in publicly promoting measures furthering Public Health. Indeed, a very prominent educationist from one of the Western provinces, in conversation with me recently, stated that, in the West, the estimate of half a million people in Canada afflicted with syphilis, an estimate that was disseminated by the Canadian Associated Press after the Ottawa meeting at which it was given publicity, was received with great scepticism and, in some quarters, with ridicule. Is that a desirable result to achieve?

What the exact prevalence of the disease in Canada is no one knows. There are no data on which to base such an estimate. It certainly is not more, but less, prevalent in Canada than it was in the British Isles before the war. In that case it would be less than eighty thousand in the whole of Canada, and probably not more than forty thousand. Is that not high enough to be alarming? Why arouse distrust in the public mind by giving publicity to exaggerations which must be eventually regarded as gross?

A. B. Macallum.

Ottawa, *July 23rd*, 1919.

Editors' Note.—The editors appreciate the remarks in the above letter. The figures were quoted in the editorial as coming from one who has done a great deal of work on this subject in the

last few years. As the figures of half a million and forty thousand respectively are simply estimates made by different authorities, we must leave it to our readers to decide who is nearer to being correct. It is thought, though, that there is more danger at the present moment in minimizing the seriousness of the venereal problem than there is in overestimating it. Unfortunately our governments never act in health matters until they are driven to it by public opinion and the latter can only be aroused with difficulty.

Obituary

DAVID HEGGIE, M.D.

Dr. David Heggie, a veteran physican and highly respected citizen of Brampton, passed away on July 19th, at the advanced age of eighty-two. He had been in poor health for a number of years and had failed rapidly of late.

He was born in Edinburgh, Scotland, coming to Canada about sixty years ago. He took up his residence in Brampton, Peel County, and through his long life always practised medicine in that town. He graduated from Queen's University.

Dr. Heggie took a prominent part in the affairs of the town until recent years and was an active educational worker and a staunch Methodist. Of his five children three sons survive him, who have all embraced their father's profession.

He was a notable figure throughout the whole district, and was universally beloved by his patients.

Dr. P. F. Coleman passed away, July 15th, in St. Michael's Hospital, Toronto. His death was the result of a paralytic stroke. He graduated in Medicine many years ago, from Toronto University.

Dr. J. W. Hayes died at his father's residence in Peterboro, following an illness of eighteen months. In 1915 he graduated in Medicine at Toronto University. For a year he was house surgeon at St. Michael's Hospital and in 1916 he took a post-graduate course in surgery at the New York City Hospital. On his return he went back to St. Michael's Hospital and became clinician on the staff of Toronto University.

Miscellany

News

MARITIME PROVINCES

The Cape Breton Medical Society was reorganized at a meeting held in the county house, Sydney.

The following officers were elected: President, Dr. E. W. Johnstone; vice-president, Dr. J. W. McLean, North Sydney; secretary-treasurer, Dr. J. B. G. Lynch, Sydney.

Executive: Dr. L. Johnstone, Sydney Mines; M. T. McLean, North Sydney; J. J. Roy, Sydney; M. T. Sullivan, Glace Bay; and D. J. Hartigan, New Waterford.

The annual meeting of the Prince Edward Island Medical Society was held July 9th, Dr. Dewar, the president, presiding.

Case reports were presented by Dr. J. McNeil and Dr. Warburton.

A very interesting address was given by Colonel (Dr.) R. H. McDonald, D.S.O., who spoke on surgical experiences in France. The following officers were elected for the ensuing year: President, Dr. J. F. McNeil, Summerside; vice-presidents, Dr. A. A. McDonald, Dr. Champion, Dr. McGuigan; secretary, Dr. Yeo (re-elected); treasurer, Dr. McMillan, (re-elected); executive committee, Dr. A. Murchison, Dr. Lauton, Dr. McInty.

Hon. D. Roberts, Minister of Public Health for the Province of New Brunswick, read a paper at the recent Quebec Medical Convention on contagious diseases, especially dealing with smallpox. Dr. Pagé said it cost the New Brunswick Government, $125,000 to enforce vaccination, and by the efforts of Dr. Roberts, 40,000 persons were vaccinated.

QUEBEC

Physicians in Quebec are giving warning of the danger of germs of communicable diseases being brought over from Europe

in the baggage of the returned soldiers. Local health authorities in Canadian communities should not let this go unheeded.

Dr. J. G. Page, Immigration Health Inspector at the harbour of Quebec, says the Press should give the greatest publicity to outbreaks of smallpox, and other contagious diseases, so that the public can be aroused to the danger and help in the cause of prevention by encouraging public vaccination, and quarantine regulations.

Recently Dr. P. Martineau, superintendent of the Quarantine Station, forty miles below Quebec, ordered one of the large incoming troopships detained longer than expected, and sent a special boat to Quebec to bring a large quantity of vaccine.

The annual apportionments distributed among the different Montreal hospitals were announced at a meeting of the Administrative Commission.

The sums distributed appear on the budget for 1919 as follows: Notre Dame Hospital, $4,000; General, $4,000; Hotel Dieu, $2,000; Western, $1,300; Homeopathic, $100; Woman's, $100; St. Justine's, Children's, $2,200; Foundling and Sick Baby's, $800; Children's Memorial, $500; Montreal Maternity, $500; Sisters of Mercy Maternity, $500; Sisters of Mercy Creche, $2,000; Grey Nun's Creche, $1,500; St. Paul's Creche, $2,000; St. Joseph Convalescent, $250; The Loyola Convalescent, $250; Herzl Hospital and Dispensary, $500; Montreal Dispensary, $500; Bruchesi Institute, $3,000 (Tubercular); Royal Edward Institute, $3,000; Mount Sina Sanatoriam, $3,000; Grace Dart Home, $600; Montreal Diet Dispensary, $200;

Dr. S. Boucher, director of the Health Department, has been appointed by the Administrative Commission, a member of the Board of Health, and Medical Health Officer of the City of Montreal, with all the power appertaining by law to this office.

Final arrangements were completed by the provincial health bureau for their annual vaccination campaign among school children, and circulars were sent out last month to all school boards, municipalities and congregations, stating that it was compulsory that every child entering school has to be vaccinated at least once for the younger ones, and within seven years for the older ones.

The enforcement of compulsory vaccination is being accepted with decreasing reluctance each year, the health officers report, and to that fact is attributed the decrease in smallpox throughout the province.

At Ottawa recently the Medical Council of Canada remained in annual session for three days. Hon. Dr. Roche, Chancellor of Western University, Dr. L. DeL. Harwood, Dean of Laval in Montreal, and Dr. N. E. McKay, of Halifax, took their seats for the first time this session. The council is composed of thirty-two representatives.

This year it was under the presidency of Dr. R. E. Walker, of New Westminster.

One important matter of business was the decision of British Columbia to relinquish the local provincial examination for their license in favour of the examinations as set by the Medical Council of Canada.

Another important matter was discussed, viz.: the re-introduction into the act of powers to negotiate with Great Britain and other countries looking towards reciprocal acknowledgements of license. The opinion is held that Canada as a whole is strong enough to assert her position in matters involving medical training and should be dealt with as a whole instead of through provinces, as now obtains. Examinations were ordered in Montreal and Halifax in October, 1919, and in Toronto, Winnipeg and Vancouver in June, 1920, the object being to facilitate candidates taking the examinations at as little expense as possible. The new President is Dr. J. C. Donnell, the Dean of Queen's Medical Faculty. The Vice-President is Dr. McNeill, of Summerside, P.E.I. The Honorary President is again Sir Thomas Roddick, of Montreal, Dr. R. W. Powell, Ottawa, is registrar, and F. H. Chrysler, K.C., of Ottawa, is general counsel.

ONTARIO

The recent report of the Provincial Board of Health, June, 1919, shows an increase in the number of cases of smallpox, scarlet fever, diphtheria, and tuberculosis, over the number reported in June, 1918.

The comparative figures of these four diseases are: June, 1918; smallpox, fifteen cases, no deaths. Scarlet fever, one hundred and ninety-six cases, four deaths. Diphtheria, one hundred and twenty-six cases, thirteen deaths. Tuberculosis, one hundred and seventy-two cases, one hundred and forty-seven deaths.

In June, 1919, there were sixty-nine cases of smallpox, and two deaths. Three hundred and ten cases of scarlet fever and

six deaths. Two hundred and seventy-three cases of diphtheria and twenty-five deaths. Two hundred and twenty-eight cases of tuberculosis and one hundred and eighty-three deaths.

Smallpox is most prevalent in the township of Harwich where eighteen cases have been reported, with one death. Guelph reports seven cases, with no deaths. Toronto has one case with no deaths.

Infantile paralysis, this year, shows several cases with five deaths, in comparison with one case and no deaths for the same period last year.

While there are nearly one thousand fewer cases of all diseases reported, the actual number of deaths shows an increase of nearly two hundred.

In June of 1918, there were 2,256 cases reported and 197 deaths.

In June of 1919, there were 1,269 cases and 399 deaths.

At the annual meeting of the Ontario Association for the care of the Feeble-minded the following officers were elected for the ensuing year: Honorary President, Dr. C. K. Clarke, Toronto; president, T. H. Wills, Hamilton; first vice-president, Mrs. A. M. Huestis, Toronto; second vice-president, Sheriff D. M. Cameron, London; third vice-president, Dr. J. H. Putnam, Ottawa; fourth vice-president, Judge Hardy, Brantford; secretary-treasurer, Dr. O. C. J. Withrow, Toronto.

To this was added a strong executive committee, to the number of twenty-six.

Announcement has been made by Hon. W. D. McPherson of the appointment of Dr. Harvey Clare to the Medical Director of Ontario Hospitals. The office, a new one, is taken as a forward step in Institutional management.

Dr. Clare is to have general supervision of the medical work in connection with Ontario hospitals. He will furnish the Ministers with reports on the movement, the discharge, and transfer elsewhere of patients, and reports on the equipment, accommodation and furnishing of the institutions.

While the office is a new one, Dr. Clare is already in the Department as an assistant Inspector of Prisons and Public Charieties. Prior to that he was Superintendent of the Toronto Reception Hospital, and assistant Superintendent to the Queen Street Toronto Hospital for the Insane.

At a recent sitting of the Ontario Medical Council, an important motion was passed.

It was moved by Dr. E. E. King, of Toronto: "That all doctors having but one year's practice before enlisting in the Army be compelled to take a six months' post-graduate course, and that the Government give them a grant of $500 to cover expenses."

THE notice of motion by Dr. Stewart condemning the Ontario Temperance Act, on the ground that it made the doctor the only medium between the Government and the Public for obtaining liquor was discussed at length, and it was finally decided by Dr. Stewart to withdraw the motion, on the ground that a referendum was to be submitted on the question soon, and that it would be inadvisable to press the motion at this time.

THE late Senator H. W. Richardson has left a legacy of $100,000 to the Kingston General Hospital for treatment of tuberculosis only. A special wing will be built for this purpose in connection with the hospital enlargement scheme in the interests of Queen's Medical College.

A RESOLUTION was passed recently by the Niagara Falls Council to raise $50,000 toward a hundred bed hospital to cost $100,000.

Public subscriptions are to meet the rest of the amount.

THE Toronto Bulletin takes a strong position on the housing problem. A recent survey by the Department of Health found that 13,574 single houses visited gave shelter to 18,123 families. In all 8,000 dwellings were found to be overcrowded.

The Bulletin points out that Toronto should have at least 5,000 additional houses for working men and their families before winter sets in, and draws attention to the very serious situation confronting the city.

DR. G. ADAMS, who for the past eight years has filled the position of epidermiologist in the Toronto Health Department, has been appointed Health Officer in the Essex Health District. Dr. Adams is not only familiar with all branches in public health matters, but is also an excellent administrator.

THE proposition to grant $50,000 for hospital work in the

County of Huron has been endorsed by the County Council Sessions from several quarters.

The sum is a proposed increased for general purposes.

A RESOLUTION presented by Dr. Clarke, of Goderich, calls for the division to be as follows: Goderich and Wingham, $15,000 each; Clinton, $10,000; Seaforth and Exeter $10,000 each.

There are now no hospitals in Seaforth and Exeter.

The division referred to was in accordance with the request of a deputation which presented their claim to the council.

BRITISH COLUMBIA

How to finance the hospitals of British Columbia was one of the questions under vigorous discussion at the recent Convention. After the matter has been considered at greater length by the Medical Association of Vancouver and Victoria a resolutions committee will undoubtedly come to some decision for a conference with the Government.

Mr. J. J. Banfield, a member of the Board of Directors of the Vancouver General Hospital, introduced the subject.

The Provincial Government, it was recommended, should take over the total expenditure of the hospitals and schools and make them provincial institutions.

The levy or a special tax in the case of the hospitals, about six dollars per year levied on all persons between the ages of eighteen and fifty would meet the requirements in British Columbia.

Most of the ninety-four hospitals in the province had government support. Although about 1,500,000 dollars per annum was contributed, the government made no provision for checking up separately the measure of their efficiency.

Under government control all institutions, large or small, would be under uniform government control.

Standardization was also a desideratum Through standardizing a much greater efficiency could be attained. The service must also be standardized and every department in the hospital.

The idea of State hospitals with absolutely free treatment was definitely opposed by Dr. Vrooman of Vancouver. Wherever tried the experiment had not been the success promised. Other speakers thought the question demanded greater consideration and that the medical profession had not been allowed time to think over the matter and express an opinion.

WESTERN NEWS

The University of British Columbia has established a Department of Nursing and those nurses taking a full course of both academic and practical training will be granted a degree in nursing. The department is to be established in connection with the Faculty of Science; the admission—matriculation or equivalent, at the discretion of the Senate. University training, two years in arts, practical work can be taken in any hospital that comes up to the standard set down by the university authorities, and such hospital will make formal application and submit evidence of fitness. Hospital graduate nurses may be awarded the degree by complying with such conditions as may be laid down by the Senate, and the Medical Council of British Columbia will be asked to draw up a standard of qualifications for the guidance of the Senate in reference to proposed hospital requirements.

Two hundred and fifty Saskatchewan returned soldiers are on the strength of the Department of Soldier Civil Re-establishment for medical or surgical treatment as the result of the recurrence of war disabilities. This announcement was made by Dr. W. C. Arnold, head of medical services for the department in this province. Of the total number on the strength for treatment one hundred and ten are tubercular.

The Daughters of the Empire have planned the erection of a children's wing to Qu'Appelle Sanitarium. There is as yet no children's pavillion in this province for the care of tuberculous children, but the splendid efforts of the I.O.D.E. in coping with the white plague is evidenced in the King Edward Cottage, erected at the Sanitarium at Ninette, Manitoba, and the Preventorium at North Toronto conducted under their auspices. Dr. R. G. Ferguson, superintendent of the Qu'Appelle Sanitarium, in a series of addresses recently given to the Order asserted that to give children the fullest measure of curative treatment they should be separated from adults. He spoke of having visited various hospitals in Canada and the United States where tubercular children were treated and the results were indeed wonderful, especially in bone, gland, and pleurisy cases, where the sun cure was used most effectively.

MEDICAL COLLEGES

W. B. Graham, registrar-treasurer of the Ontario College of Pharmacy, reports this year there will be accommodation for one hundred and forty-one students. Despite the fact that all the seats have been applied for, the management continue to receive applications, and in the event of any member failing to accept his seat, it will be filled by those on record in the waiting list.

The school opens on September 4th. Six women students have registered. Eleven members were elected to the council of the Ontario College of Pharmacy for the next two years. The results of two elections to decide on representatives for districts number 3 and 12 will be announced on August 7th.

The council elect will meet on the third Monday in November when they will choose their president and other officers.

Dr. R. C. Dearle has been appointed to the Chair of Physics in Western University. He succeeds Dr. Ernest Baker, who has resigned, to take up duties in research work in the Government Laboratories at the University of Michigan.

Dr. Dearle graduated at Toronto University, receiving his B.A. degree in 1914 and M.A. degree the following year.

The degree of Ph.D. was conferred upon him last month by Toronto University.

The clinical work of Queen's Medical College will eventually be transferred to Ottawa, when the new hospital is completed, as the small population of Kingston makes the supply necessarily inadequate.

The new physics building at the University of Saskatchewan will be work done along advanced scientific lines. It will contain an auditorium with a seating capacity of two hundred, two laboratories, one with a seating capacity of thirty-four. Class rooms for electric and phonometric work

Toronto University inaugurates a Special Course on August 15th, for doctors who have been overseas.

It will extend over a period of six weeks.

ARMY MEDICAL SERVICES

THE Distinguished Conduct Medal has been awarded to: L. F. Allingham, 2nd Field Ambulance, C.A.M.C.; H. H. Chaplain, C.A.M.C., J. C. McKinnon, 3rd Canadian Field Ambulance, C.A.M.C.; W. D. Foran, attached to 1st Field Ambulance, C.A.M.C. H. D. Moses, 7th Cavalry Field Ambulance, C.A.M.C.; J. F. M. Johnstone, attached to 4th Field Ambulance, C.A.M.C.

ELMER DICKINSON, Medicals, C.A.M.C., was awarded the Military Cross at a recent investiture at Buckingham Palace.

THE Royal Red Cross has been awarded to a large number of Canadian Nursing Sisters. The list follows: Nursing Sisters Sarah P. Johnson, Amy E. MacMahon, Helen L. McIntosh, Matron E. F. Pense, Matron Lucy G. Squire, Nursing Sister Flora H. Wylie. Royal Red Cross (2nd class): Nursing Sisters Sarah Archard, C. P. Arnoldi, Katharine E. Bardon, Leila Bready, Evadne K, Cotter, Gertrude C. Cressewell, Evangeline L. Emsley, Mary E. Engelke, Annabel J. Fraser, Jessie M. Gent, Gertrude E. Halpenny, Alice E. Hindley, Margaret Johnston, Margaret Leamy, Carolyn J. Little, Katharine A. MacLeod, Mary A. MacNaughton, Mary McPherson, Rachael McConnell, Louise S. McGregor, Minnie MacInnis, Myrtle MacMillan, Harriet T. Meiklejohn, Emma G. Moore, Minnie E. Misner, Eva L. Morkill, Isabel B. Forbes Muir, Elsie S. Nicholson, Kathleen Ponton, Marion E. Price, Ethel G. Saunders, Alice M. Stewart, Mary Catharine Stewart, Agnes Sutherland, Annette M. Tate, Ada A. Taylor, Alice G. Turner, Marjorie M. Webb, Margaret J. Woods, Helen J. Woolson.

THE Bar to the Royal Red Cross has been awarded to Matron Evelyn Wilson.

To replace Lt.-Col. F. McKelvey Bell, who recently resigned his position as Director of Medical Services for the Department of Soldiers' Civil Re-establishment, the appointment has been made of Col. E. G. Davis, C.M.G., M.D., as Acting Director. Col. Davis went overseas in 1915 as a junior officer with No. 3 General Hospital. He was sent out to the Island of Lemnos in the Mediterranean, but later was recalled to England, where he was appointed Colonel and sent to France to take charge of a hospital at Doullens. Recalled again, he was made Officer Commanding the Shorncliffe Military Hospital. During his service overseas he was twice mentioned in despatches, and was awarded the C.M.G.

in recognition of his services and ability. Since his arrival in Canada Col. Davies has been A.D.M.S. at Regina, and has served as Unit Medical Director for the Department of Soldiers' Civil Re-establishment at Montreal.

The Medical Units organized or reorganized by the Canadian Army Medical Services during the year 1917 in the United Kingdom were, as stated in the Progress Reports of the C.A.M.C., as follows: Ten general hospitals. Eight special hospitals. Six convalescent hospitals. One ship hospital. Two laboratory units. Four sanitary sections. One central medical store. Two advance depot medical stores. One regimental depot and training school. Two administrative units. D.M.S. branch and A.D.M.S., London area. In this reorganization hospital expansion was effected as follows: Canadian Military Hospital, Basingstoke, 1,040 beds, projected to have 2,500 beds. The net total expansion above is 11,432 beds. The total Canadian Hospital capacity is now (at the end of 1917) 19,950 beds.

The International committee of the Red Cross announces that the central bureau founded in Vienna to fight epidemics in Central Europe, includes delegates from Poland, German-Austria, Hungary, Jugo-Slavia, Ukraine, Czecho-Slovakia, and Roumania. The bureau proposes, by means of contributions from the states interested, to assemble a fund for the purchase of medical necessities, coordinate the efforts of the governments, establish a sanctuary cordon and generally interest the whole of Europe in the dreadful plights of the peoples who are being decimated by epidemics. The sub-committee which is directing the undertaking has conferred with Sir David Henderson, director-general of the League of Red Cross societies, who declares that the establishment in Geneva of the capital of the League of Nations, will greatly facilitate joint national action.

THE MEDICAL SOCIETY OF NOVA SCOTIA

This Society held its sixty-sixth annual meeting at Antigonish on July 2nd and 3rd, under the Presidency of Dr. George H. Murphy of Halifax. Colonel F. S. L. Ford, C.M.G., C.A.M.C., of Liverpool, was first vice-president, and Dr. J. J. Roy, of Sydney, second vice-president.

The meetings were held in the science building of the University of St. Francois Xavier. The Society is greatly indebted to the University authorities for this courtesy.

The first paper was an account of two cases of Hæmaturia, under the care of Dr. Philip Weatherbe of Halifax. Both were infections due to the bacillus coli. In one the patient was a boy who had had his vitality lowered by pressure from excessive abdominal massage by an osteopath some time previously to the case being seen. This case recovered by appropriate drugs. In the second case there were multiple foci, and the kidney had to be excised.

The second paper on "The surgery of the stomach", by Dr. A. J. A. Hamilton, of Boston, was illustrated by *x*-ray photographs which helped very much to elucidate the one hundred cases in which gastro-duodenostomy or gastro-jejunostomy had been performed. This paper gave rise to an interesting discussion.

The first paper at the afternoon session was on "The surgery of the chest", by Lieutenant-Colonel F. A. C. Scrimger, V.C., C.A.M.C., of Montreal. This paper described conditions seen during Colonel Scrimger's long experience at the War. It elicited a lengthy and instructive discussion. The second paper was contributed jointly by Major L. R. Morse, C.A.M.C., in charge of the *x*-ray department at Camp Hill Hospital, Halifax, and by Dr. Arthur Birt, in charge of the medical cases there. A large number of conditions in œsophageal, gastric, cardiac, and renal disease were carefully described. The third paper was on the "*X*-ray diagnosis of pulmonary tuberculosis", by Dr. R. J. Collins, of the Nova Scotia Sanatorium, Kentville. It discussed the interpretation of the skiagraphs in the light of clinical findings.

At the evening meeting, to which the public were admitted, the town was represented by the Deputy-Mayor, and the University by the Rector, the Rev. Dr. MacPherson.

In the presidential address, Dr. Murphy dealt with the relations of the medical profession to such topics as venereal diseases, prohibition and the educating of the laity in regard to a public health conscience. The address which had a fine literary flavour, was listened to with much attentive appreciation, and is published in this issue.

Dr. W. H. Hattie, Principal Medical Health Officer for Nova Scotia, followed with a valuable and thoughtful paper on "Mental Hygiene", which was really a plea for active intelligent prophylaxis in mental disorders, actual and possible.

The last paper for the evening was "The medical profession as a state service", by Professor D. Fraser Harris, of Dalhousie University. It consisted of a sketch of the methods whereby the physicians and the medical officers of health may both become

civil servants, salaried, pensioned, rewarded, decorated, etc., as such. The hospitals and universities all become State institutions, and all medical graduates enter the State Medical Service, and all by one portal. Irregular practitioners and the dupes of pseudo-science are exposed and eliminated. Medical research, all laboratories, the nursing profession, dentistry, and all therapeutic specialisms, pass under the control of the experts of the State Medical Service. It is to be self-supporting and self-administering. This is neo-socialism or co-operationism, the organizing of the expert few for the benefit of the many, as in the late War. The service could be financed partly by taxation for the public health in lieu of taxes for navy and army no longer needed on the huge scale of the past, and partly by the State become trustee for the endowments of hospitals and schools of medicine.

On July 3rd, the morning session was opened by a lucid and condensed exposition of the idea of workmen's compensation in relation to the medical profession, by Dr. M. D. Morrison, Halifax, Chief Medical Officer, Workmen's Compensation Board of Nova Scotia.

Lieutenant-Colonel J. A. Sponagle's paper on "A plea for an extension of our hospital system in Nova Scotia", was listened to with much interest. It advocated increasing the usefulness of the hospitals of the province in order to make them centres for the care and cure of a much larger number of persons than at present. It was the rural population that especially needed hospital benefits, that at present least received them.

The paper by Dr. M. E. McGarry, Margaree Forks, N.S., dealt with "The present tendency to minimize the importance of drug therapeutics". This was a valuable and timely contribution. The author pointed out that too much dependence should not be put on the results of experimentation with certain drugs on the lower animals, inasmuch as some animals reacted to some drugs differently from man. The author urged that clinical experience with drugs, although "empirical", is a safer guide than laboratory results in some cases.

Dr. A. H. Gordon, of Montreal General Hospital, gave the last paper, which was on "Abscess of the lung". The author dwelt particularly on the difficulties of diagnosis in these cases, and illustrated his remarks with lantern-slides of skiagrams of pulmonary abscess and empyema. In some cases, the clinical history was correlated with the post-mortem findings. The paper, which was fully appreciated, gave rise to a useful discussion.

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PRESIDENTIAL ADDRESS

By George H. Murphy, M.D., C.M., F.A.C.S.

Halifax

MY first duty is to express my appreciation for the honour of presiding at this, the sixty-sixth meeting of the Medical Society of Nova Scotia. It is an important post and carries with it responsibilities worthy of our best efforts. Nobody knows better than I how far short I must come of fulfilling the requirements of the office. The hurly-burly of active practice and a heavy hospital service fill in one's time and absorb one's energies so completely, that the weary plodder can do little more than touch the fringe of any work lying outside the confines of his daily toil.

It is an incident of some interest to me that my election as president of the Medical Society of Nova Scotia should synchronize with the selection of Antigonish as its meeting place. For this is my native county. And when one finds himself amid what were familiar surroundings some twenty years ago, he is apt to indulge in reflections, to dream dreams, and even to nibble at the margin of prophecy. If my remarks to you this evening then, wander at times from the strictly practical into such channels, I plead environment as excuse, and the privilege of a president to go as far as he likes from the beaten track of our work; to go forth even into the lanes and by-ways of our calling, to gather in anything he believes is escaping attention on account of its distance from the main road. If I indulge in prophecy, I plead no excuse except that boldness which braves the penalty of a prophet in his own country.

At this our first meeting after the war, I wish to extent a hearty

Delivered before the sixty-sixth annual meeting of the Medical Society of Nova Scotia, July, 1919.

welcome to the men of our profession who have returned and are returning from service overseas. To go meant personal sacrifice for some, to others exceptional opportunity, but to all it meant duty; duty enriched by a fine spirit of patriotism. The medical profession of Nova Scotia is proud of the men it sent overseas, and I feel that I am expressing the feelings of the rest of us when I say that every effort will be made to make their return to practice easy and satisfactory.

Obituary

My next duty is to speak a word of parting. Our obituary list for the year is a comparatively large one. We have lost Doctors D. A. Campbell, Gossip, LeBlanc, MacDonald, Burns, Chipman, MacKenzie, MacDonnell, Norwood, Morrow, Godfrey, Lannigan, and Keith. Quite a gap in our ranks. And as we hasten to close up in order to present our best front to the enemy, let us glance for a moment at the manner of men they were that have fallen. Some had barely buckled on their armour; some saw out the allotted span, and others dropped from the dangerous arches before they had passed the centre of the bridge. Lieutenant-Colonel Howard MacDonald went down with the *Llandovery Castle*. Like others, he had heard his country's call and brought to the service that zeal and ability, which characterized the Canadian Army Medical Service and made it great.

Dr. D. A. Campbell was a former president of this Society, a regular attendant at its meetings; and whether we regard him as a doctor or a teacher, he was easily a leader in the profession of our province. I was a student of his and always had for him that affection and respect which a grateful pupils feels for an honoured and able teacher. A broad sympathetic nature combined with fine intellectual gifts eminently endowed him for the profession he adopted and honoured. He did his work well, whether by the bedside of his patient, in the lecture room of the student, or with pen or tongue setting forth the claims, or defending the cherished rights of the profession he loved so well. To him and all, this Society, representing the profession of the province, bows in respectful mourning. Departed brothers of our calling, ye have fought the good fight! Amid the storms and hardships of practice, ye have trod with firm foot the arduous pathway of duty. Now reap the reward! Former associates, close friends, and worthy physicians, *Vale*.

"There is no Death! What seems so is transition;
This life of mortal breath
Is but a suburb of the life Elysian,
Whose portal we call Death."

Our Problems

Gentlemen, I recall from the days I read a little Shakespeare, the words Macbeth addressed to the Doctor who was treating unsuccessfully Lady Macbeth. Macbeth is in dire straits. Retributive justice is finding him out. His thanes are deserting him. His wife is dying from a mental disease due to the stress of their terribly sinful life. Macbeth knows but too well the cause of her complaint and realizes that medicines are of no avail. Angrily he says to the doctor: "Throw physic to the dogs, I'll none of it." And in a moment or two, his mind having run back over the picture of what might have been, he says in that helpless and pathetic way, which makes us sorry even for him:

"If thou could'st, doctor, cast
The water of my land, find her disease,
And purge it to a sound and pristine health,
I would applaud thee to the very echo
That should applaud again."

In referring, then, to some of our problems this evening, I may be permitted to interpret in the sense of actual disease Macbeth's lines, and apply them to ourselves. I shall only touch, however, a few of the problems which these extraordinary, and I might say perilous times, seem to accentuate.

The war did not create any new problems in the realm of medicine. It did accentuate the old ones. It brought before our eyes, as nothing else could have done, the fit and the unfit. No generalities there; a man was either physically fit to fight or he was not. If not, was it a preventible disease? Was it inherited from the parent; and if so, what facilities had the parent given him by the State and the medical profession to avoid that disease? And if unfortunately infected, did he have the best that science and a benevolent government could give in order that his cure be complete? Were it due to unhealthy surroundings and ignorance of parents in early life, what have we as a profession been doing to create conditions where children can be born right, where proper environment can wield its mighty influence in evolving and perfecting a virile manhood and womanhood; beside which all other departments of our national and social life are inconsiderate and

trivial. Every activity in our country must be vivified and revivified by the gush and flow of healthy human life throbbing through the arteries of that vast and complicated machinery that make up the structure of an intelligent and progressive nationality. Mr. Lloyd George, face to face with the large proportion of the unfit in Great Britain, turns to remedial reconstruction with the pertinent remark that you can't make an A-1 nation with a C-3 people.

The essential problem, gentlemen, as I understand it, relates to the public health, and in its solution our efforts must be more than ever before cast in the realm of preventative medicine. We must be the leaven, working quietly and effective in the great national paste until the whole is leavened. We must create an atmosphere so redolent of the best health interests of the whole people that our legislators shall take as naturally and ardently to legislation affecting the public health as they have in the past to promoting big industrial and commercial interests. Society, and societies, and the Churches will widen their scope in order to bring home to everyone the real significance of a sound mind in a sound body.

Tuberculosis

Many of the unfit had tuberculous lesions of either the lungs, bones or joints. The medical examinations at the recruiting stations set the facts before us in a concrete way; but we knew before, from our own observation and from the health and sanatorium reports, that we have far too great a proportion of the various types of tuberculosis in our province. Perhaps in our contemplation of the evils of pulmonary tuberculosis we have not laid enough stress upon the abdominal forms and that of bones and joints. But the general practitioner, as well as the hospital surgeon, is familiar with the types and knows that the deadly black line of our tuberculosis charts includes the children that have died from joint and bone infection. There are those, too, who, recovering under treatment, are left with anchylosed joints and weakened bones, sometimes total cripples, and often with a low functional index lessening their earning power and status as members of the community and as responsible citizens of the state. I need but mention the hip, the knee, the ankle, and the bony lesions to remind you of the large number of such cases you are meeting in your practice. In the hospitals they constitute an important part of our surgical work; and as one sweats and worries over his diseased bones and ruined

joints, and foresees that the best fruits of his labour must be a crippled man or woman, he can not escape the reflection, while granting the benefits of surgical repair, that for the ideal of curing our patient we are at the wrong end of the process. We are dealing then with effects rather than causes, though I do not deny that in practice, we can do much good by working backwards. But the ideal of our profession should be to attack an inherently preventible disease by striking at the cause.

It seems to be a law of nature, whether among the units of the microscopic world, or among the larger ones of the national and social order, that once a diseased condition gets a certain headway, it is hard indeed to get it under control. It develops force as it moves and destroys: and often before the counter-attack acts upon it effectively, much harm is done. We do what we can with diseased bones and joints; we rarely make them what they were before attacked. The Germans must do what they can to repair the injury wrought to a stricken world, but they, too, are at the wrong end. Prevention of the development and propagation of a virulent philosophy would have saved the world from the scourge of their vile contagion, and themselves from humiliation, downfall, and disgrace.

The political surgeons of the allied countries have been for some time working on the bones and joints of the body politic. They are trying to straighten this limb and bring function to that joint. They are chiselling out the sequestra from the discharging sinuses. The outlook for recovery is good; and as they work and sweat over the heaviest piece of political surgery ever undertaken, a low, determined murmur spreads throughout the immense amphitheatre of the world, "Never again! Never again!" And they have formed a gigantic league bent to the common purpose of stamping out from civilization the great red plague. Nations are not only to be trained in preventative measures, but also policed to ensure that these measures are carried out.

We are a diverse, or perhaps perverse, conglomeration of units, not standardized like the Ford car, and to get us working in harmony, it is not enough to have our duty pointed out to us, but it is also necessary to adopt measures to insure the performance of that duty. For the one man or woman who from an inherent sense of duty submits to the prosecution of certain laws and regulations for the good of public health, there are five who feel that this is just another set of formulæ turned out by professional legislators, or local officiousness, and not to be taken too seriously.

In fighting the great white plague we must do what the allies are doing to eradicate the great red plague. I make no apologies, gentlemen, for striking an analogy between our position and theirs; between disease of the physical, and that of the social and national order. We have not yet leagued our profession to its full effectiveness, and the policing of the territory has been inadequate and in some ways altogether futile. When householders learn from the experience of fines or imprisonment that they may not keep disease producing nuisances in their back yards ; when landlords learn in the same way that they may not crowd men, women and children in small hovels where the smoke of some near-by factory or some worse thing takes the place of God's sunshine and fresh air; when the people themselves, who with full knowledge of their responsibility, wilfully break the health laws, shall suffer the penalty of broken laws, we shall begin to get results. And they will be great results, gentlemen. They will flow from the fountain source of wise laws framed under the guidance of a unified profession united to the State in the closest possible ties, and supported and executed by a public that, high and low, has realized in full that no one lives to himself alone—that the right of the individul must blend in harmony with the duties he owes his community and his country.

Tuberculosis, then, in its different forms is our first great problem, and its solution belongs essentially to preventative medicine. I hope to touch later more definitely upon the relationship between an organized profession and preventative medicine. But before that let me glance at the venereal problem.

Venereal Diseases

There is nothing new about the problem of venereal disease; it is, to say the least, very ancient history. But its age does not clothe it with any of that respect we owe to a worthy foeman. It is an enemy not of the light, but of the darkness. It belongs to the insidious, lurking, merciless class, gloating in its shame over the ruin it has wrought in every era, and in every country. It has the powerful backing of intemperance, ignorance, and immorality. It has no honour in its warfare, because the innocent are made to suffer with the guilty.

During the air raids and submarine deviltries of the Germans, our moral sense was moved to profound indignation at the wholesale massacre of women and little children. Perhaps the slaughtering of the children was the super-outrage, which, at last, aroused

the great soul of the world, and not only brought down defeat and humiliation on the once great German nation, but left it for a generation at least an object of opprobrium and disgust. Yet the German havoc was a mere trifle compared to that wrought in the born and the unborn by syphilis and gonorrhœa.

Addressing practising physicians, I need not elaborate the results of this disease. Nor need I, as a hospital surgeon, tell you that in our provincial hospital at Halifax, a large percentage of our abdominal surgery has to do with pathological states in the pelvis caused by the gonococci. The results of this infection in the female are simply appalling. We become so accustomed to it that we do not reflect seriously enough on its real significance. It is bad enough to find such conditions in females who recklessly tread the "primrose path"; but when one finds innocent women with diseased tubes and ovaries, requiring operations that often practically unsex them, one cannot escape the conviction that foul play is abroad in our land, and that virtue and good womanhood are not protected as they should be. Apart from this, there is the loss to the State, for such women are generally sterile. There is, too, domestic unhappiness tending to disrupt that vital unit of the nation, the home.

Can we do anything? We are all doing something, no doubt. Perhaps with better organization of our profession we could do more. Here the remedy is essentially prophylactic; and prophylaxis is impossible without some proper form of education.

We must drag this thing out of the darkness into the light. We must place it where all may see it. We must let the moral, social and intellectual light of the world beat upon it. An ugly, nasty object, you say. Well, this is just the reason why you must gaze upon it. You remember MacDuff's words when he had brought to the ground the arch-villain Macbeth, perhaps in all Shakespeare the most diabolical:

> "Then yield the coward
> And live to be the show and gaze of time;
> We'll have thee as our rarer monsters are,
> Painted upon a pole, and underwrit,
> 'Here you may see the tyrant'."

We must exhibit this tyrant of venereal disease to the people. In this case seeing is not only believing, but also avoiding. Light is what we need. Some for a time may not understand the necessity for education in this matter of venereal disease. But we should carry on. "And the Light shineth in darkness, but the darkness comprehendeth it not."

Whoever has read the "Breakfast Table" will recall Oliver Wendell Holmes' illustration in discussing the value of proper publicity of certain great social questions. He tells that walking through the fields one day he came upon a large flat stone, and in obedience to some instinct put his foot under it, and turned it over. What did he see? Bugs, worms, and slimy creeping things; and, when the sunlight was suddenly let in upon them, they hurried to hide themselves, because, being creatures of the dark and filth, they cannot live in the light. A walk some time after brought him to the same spot, but where the stone formerly lay with its slimy denizens of the dark, he finds the green grass spangled with daisies nodding in the mellow sunshine. He finds highly organized life and beauty where previously existed the sordid and the vile. He had let the light in.

Organization

To meet our problems which are certain to become more complex as we move onward, the first essential is better organization of our powers. 'Tis true that a unity of purpose exists, namely the treatment of disease. This is the rock bottom upon which all of our efforts rest, and it might be supposed that so vitally worthy an object would draw around it every power of the profession and the State. We have no such organization within our ranks and no such co-operation from without. The gap between our governing bodies and the medical profession has not been bridged well. We have been a number of diverse units, doing well in our way, day and night, treating disease, working often far beyond the limit of our strength; but with a deficiency of that practical vision which would draw us all together in an army united for the purpose of preventing disease. Many of us have forgotten to some degree at least this most important element of our calling. We have been the seed that has fallen on good ground, and, growing up, has become choked with the weeds of care and concerns of the world. We have often, 'tis true, cried out for better things, but the voice was not that of a united profession, and the result has been that only in the present year did our Canadian parliament bring in the long overdue measure providing for a department of public health.

The net value of this new department, and that of our own province, must depend to a very great extent on the support they receive from the whole profession. The philosophy of it is this, that officers of the public health, no matter how great their ability

and zeal, must apportion their results on the degree of co-operation they receive from the profession as a whole.

The note, therefore, which I wish to strike as president of this, the sixty-sixth meeting of our Society, is *a more organized profession*. The war taught us in a most striking way the tremendous significance of organization. The war was finally won by virtue of it; and in the war against disease we can do no better than follow the example of the best brain efforts of highly endowed men, face to face with the proposition of saving mankind from a virulent and destructive malady.

The whole scheme of the universe is organization. The men of the stone age hunted the mammoth together. Our early pioneers built block houses where whole communities could gather together to protect themselves from the Indians. The building of towns, whether for people or prairie dogs or beavers, is the result of community action and organization. Disease germs go in hordes, and by unity of action make things pretty hot for us. And one could go on enumerating examples where reason and instinct demonstrate the power of organization.

What benefits from a public health standpoint would better organization of the doctors promote? We would get a better educational propaganda. Then, each doctor would find it to be part of his business to educate in the ways of preventing disease. His standing in the profession would be measured as much by his activity and ability in protecting his community, as by his skill in actual treatment of disease conditions. I believe we cannot over-estimate the value of education. Without it all our health laws and the best efforts of our most zealous health officers will fall short of their full effectiveness. And the only way I can see by which the gospel of sanitation can be brought home to all the people is by the medical profession acting through its practitioners in co-operation with the health officers and clinical teachers appointed by the government.

I could take you to farm houses in this county where whole families were practically wiped out by pulmonary tuberculosis. First one boy or girl was stricken, then another and another. This, in otherwise robust and hearty Highland Scotch families. They were sacrificed because they did not know that consumption was an actively communicable disease instead of a deadly "decline", as they regarded it, and that it could be prevented or even cured by throwing their houses open to sunlight and fresh air, and adopting the other measures now prescribed. Instead they closed their

windows tight, let the germ-laden sputum dry up to infect the air of the whole house, and thus passed the deadly virus on to the next most vulnerable. Hence on their broad farms surrounded by every agency of protection and cure, they suffered the consequences of their folly: "The pity of it, Iago."

I know that conditions in this county and the whole province are much better to-day. Instruction coming in one way or another, whether by pamphlets or lectures from our most vigilant Provincial Health Officer, or in other ways has brought the elements of preventative medicine to the cottage of the remotest country place. But, as Tennyson put it: "Knowledge comes but wisdom lingers," and I would not be so certain that practice is in keeping with the knowledge of the subject.

Organization will help us to fight the venereal menace. It will help us to carry out laws framed for that purpose. Above all, it will help to work out some practical plan of education, or become an active agent in the plan now being put in operation in Great Britain. We must have co-operation here and our legislative bodies and the doctors must be working in the utmost harmony.

And, gentlemen, if we were better organized than we are, we should escape many annoyances, and even hardships. It would then come to pass that before creating laws that depend essentially for their execution on the medical profession, our legislators would, as a matter of course, consult the latter to obtain its judgement and co-operation. The shoulders of our profession may be broad and able to bear heavy burdens, but it is not always so much the weight as the irritating qualities of the burden which distress us. Our dutiful old medicine man has squared his shoulders and carried more than one bundle placed thereon by them that make laws; and some of those bundles had stickers in them which irritated the staid old gentleman's back very considerably; and, being human, he just swore a bit and carried on. For instance, the liquor law. Every thirst, licit and illicit, is placed on the shoulders of the doctor. He alone was made the medium through whom divers and sundry appetites, real or feigned, worked their way back to the refreshing fountain of the vendor. No wonder if the bulwarks of therapeusis broke down at times before this persistent and uncompromising force. Bear ye one another's burdens, indeed! But when a quiet and generally harmless body of men are made to bear the weight of a country's thirst, which thirst has an ancestry running back through centuries and ages even to the days, in the far away, when Noah planted his vineyard, and was afterwards found in a com-

promising position in his tent—I say, when a burden brings responsibilities such as this, I submit in all seriousness, 'tis a bit unweldy to carry and should not have been imposed without our consent.

We can remedy many such grievances with proper organization. We can raise the standard and efficiency of our service. We are on the verge of hospital standardization; and we are not far from the time when men who essay surgery shall have to serve out a special apprenticeship before undertaking routine work on their own account.

With a well organized profession we can deal better with the cancer problem. Here too, some degree of education of the public is indicated. A little light on this subject and we should not get so many late cases of cancer of the breast, the uterus, and the lip. The time, too, is opportune, because the multiplication of hospitals has been doing away with the popular prejudice against cutting operations for cancer.

As a profession we should have a voice in the curricula of the medical schools. And here, and now, I would appeal to the profession of the province for united interest in the medical faculty of Dalhousie University. In all other departments of education, our status rests on the efficiency of our educational institutions; and although this may not apply to the same extent in medicine, since many of our doctors take their course outside the province, yet in a general way our medical college is an index of our standing, and therefore it behooves us to assist in keeping its standard up to the highest. To take one instance where assistance would be easy and practicable: interesting pathological specimens could be sent in from the smaller hospitals to help in building up a first class pathological museum at Dalhousie University. And I wish to strike another note. Have we not reached the time when some degree of affiliation or co-operation could be arranged between the colleges of this province and the medical school of Dalhousie? The interests of none of the denominational colleges would be prejudiced by such an arrangement, since the requirements of medical education can only be met in the large centres of population.

Gentlemen, at this first meeting after the war, there are so many thoughts to occupy our minds. In every department of human activity men seem to be standing on the boundary line between the old order and the new. The new is not entirely clear to them yet. Some mists still hamper the vision, and there are people who dash into them not knowing whither they go or what

they really desire. We have, consequently, in some quarters, what seems like an attempt to disregard all law and order; to pull down rather than to build up. Things will right themselves in time. The mists will disperse. The uneasiness, the uncertainty, the fury even, are but the phenomena of transition. It is clear at this stage, however, that the spirit of organization is in the air. Co-operation, team work, organization, must take the place of straggling, isolated, individual effort. Greater efficiency in all departments, and adjustment of that efficiency so that the humblest citizen shall share its benefits equally with the greatest. The medical profession should not stand passively by. We must lead on of our own volition, or be caught up and carried on by extraneous currents. We must lead or be led.

In the grand old story of the Arthurian Knights, we recall the philosophic mood in which King Arthur beheld the coming of a new era. Looking back, he saw that, great as had been the services rendered by his famous Order of the Round Table, it had, nevertheless many defects, the remedying of which required new forms of organization. Turning to Bedevere, the only one of all his knights to remain with him, he said:

> "The old order changeth, yielding place to new,
> And God fulfils Himself in many ways."

The Ontario Provincial Board of Health announces that it is ready to supply diluted antitoxin for intravenous use.

The antitoxin is put up in 5,000-unit syringes, and consists of antitoxin which has been diluted one-half with sterile physiological salt solution. The actual dose of antitoxin in each syringe is 5,000 units. It has been determined that antitoxin so diluted is much less likely to cause severe reaction when given intravenously. The use of this antitoxin is recommended in cases of diphtheria which are not seen by the physician until the patient has been ill for several days; also in early cases which appear to be acutely toxic. Laryngeal diphtheria, which has gone unrecognized for several days, may be treated with benefit with this antitoxin for intravenous injection.

CARDIAC DISEASE WITH EXTENSIVE VENOUS AND CARDIAC THROMBOSIS

By F. G. Finley, C.B., M.D.

Montreal

IN advanced stages of cardiac and renal disease there is a diminished resistence to infection. This is often noticeable after the admission of a case of erysipelas to a medical ward, when one or more of these chronic cases are often attacked by the disease.

In the case to be reported, one of cardiac hypertrophy and dilatation, the breakdown appeared to be due to a subacute infection with staphylococcus aureus, the condition being accompanied with extensive venous and cardiac thrombi.

Whilst a terminal infection, especially broncho-pneumonia, is frequent during the last days of life in chronic cardiac cases, it is less usual to find infection under such condition running a prolonged course. The successive vascular thrombi contributed a considerable degree of interest to the clinical course of the illness.

Mrs. Fletcher, aged thirty-nine, was admitted to the Montreal General Hospital on January 13th, 1919, complaining of pain in the chest, cough, and paralysis of the right arm and leg.

The patient was married at twenty. She has had two living children and four miscarriages. Shortly after her marriage, she began to suffer from severe attacks of vomiting, accompanied by severe headache and pain in the epigastrium. These attacks lasted as long as three months at a time, but since coming to this country, seven years ago, they have become less frequent and severe. There has, however, been an increased tendency to diarrhœa. Her habits have always been temperate and she has always worked hard.

Present illness. Five weeks ago she was taken suddenly with rather severe pain in the right side with diminution of power in the arm and leg. The onset was also marked by severe dyspnœa, a symptom which had been present only to a slight degree before. The pain in the side lessened, but the dyspnœa grew worse with

Read at the fiftieth meeting annual of the Association, Quebec, June, 1919.

cough and pain in the chest. She had some vomiting and also epigastric pain. On January 10th, three days before admission, she found that she was unable to move the left arm, and on looking in a glass found that the face was drawn to the right side. During the past two days she has noticed a gradual loss of power in the left leg.

Present condition. The patient is a fairly nourished woman, propped up in bed to breathe. The cheeks are flushed, the lips slightly blue and a temperature maximum of $104\frac{4}{5}°$. The pulse is small, blood pressure 158, diastolic 120. The apex impulse is forcible, and in the nipple line, 9 cm. from mid-sternum. The dulness begins at the third rib and extends $4\frac{1}{2}$ cm. to the right and $10\frac{1}{2}$ cm. to the left of the mid-line. At the apex the sounds are muffled, there is an occasional systolic murmur, and there is a marked proto-diastolic gallop rhythm. There is a faint diastolic murmur at the pulmonary cartilage. There is slight tenderness over the mid-sternum and at the apex. There is a rather severe catching pain on the left side of the chest and to a less extent on the right side and in the epigastrium. There is dulness at the left base extending to the costal border in the lower axilla and obliterating Trauve's space. Over this area there is feeble breathing, but vocal fremitus and vocal resonance are unobtainable owing to the feeble voice. At the right base there are two finger-breadths of dulness, feeble breathing and crepitations. In the left axilla there is a pleural friction.

The liver extends one finger's-breadth below the umbilicus and has a vertical dulness of 21 cm.

The left side of the body is paralyzed. The mouth is drawn to the right side on movement but shows no change at rest. The tongue is slightly protruded to the left side. The left arm can be moved slightly at the shoulder but not below, the fingers are half closed, and there is a slight degree of spasm at the elbow. The leg is weak but she can move the hip, knee, and toes to a slight extent. Knee jerks are both increased, there is a well marked clonus on the right or non-paralyzed side and a few jerks on the left; a Babinski reflex is present on both sides. Sensation is normal.

On January 24th, the patient complained of sudden severe pain in the left forearm. A day or two previously she had complained of slight pain in this part with tenderness. Fulness in the supraclavicular region was noticeable, with tenderness along the course of the axillary veins and of the veins at the bend of the elbow, with some enlargement of the veins of the forearm and front

of the chest. The hand was slightly swollen and there was marked œdema about the elbow. A rounded and tender cord was present in the supraclavicular region and along the line of the brachial vessels. This condition was regarded as a thrombosis of the brachial, subclavian and probably the innominate veins.

On February 2nd, it was noted that the power of the arm had been rapidly returning for a week. She could grasp an object and could flex and extend the wrist. There was no trace of weakness in the face or leg. The left-sided Babinski and ankle clonus was still present. The left subclavian vein was felt as a hard cord but without tenderness.

February 6th. Three days ago she complained of considerable pain in the right side of the neck and forearm, followed next day by fulness in the supraclavicular region with tenderness extending down to the axilla. A cord was felt along the posterior border of the sterno-mastoid muscle and along the course of the brachial vessels; the veins of the forearm and front of the chest were slightly swollen and prominent. Swelling of the right arm was present for a few days.

On March 1st, the patient had a weak turn, becoming cyanosed, and paralysis again appeared on the left side in face, arm, and leg. A double Babinski, ankle clonus and increased knee jerks were present, also incontinence of urine and fæces.

During her illness there was considerable dyspnœa, often orthopnœa, with a moderate grade of cyanosis. The heart almost constantly presented the pre-systolic gallop rhythm and there was heard only an occasional systolic murmur at the apex, whilst the diastolic murmur heard on admission passed off soon after admission, being only heard on two occasions. There was an increased blood pressure until late on in the disease.

The urine varied in specific gravity from 1021 to 1026, containing ·6 to ·9 per cent. of albumen, granular and hyaline casts, pus and epithelium. The quantity was reduced, varying from 150 to 500 and 600 c.c. daily.

During the stay in hospital the temperature was slightly elevated most of the time, varying from 99° to 101° or 102° in the evening and usually normal or subnormal in the morning. There were short periods of apyrexia. Blood counts showed white cells from 8,200 to 9,200. Wassermann always negative. Blood cultures taken on several occasions were negative. Electro-cardiographic tracings were normal, and also the fundi of the eye. The condition of the patient became gradually worse.

The paralysis on the left side persisted with frequent incontinence. Dyspnœa became more urgent, the pulse weak and small, prostration was marked and there were severe pains in the right thigh and in the abdomen, for which no satisfactory explanation would be found. She died on April 16th.

Abstract of autopsy notes, performed by Dr. W. J. Scott, 11 hours p.m.

There is œdema of the left upper arm and left foot. The heart weighs 500 grams, the organ is dilated and hypertrophied and there are, in addition to post-mortem clots, yellowish grey clots adherent to the walls of the right auricle and ventricle and to that of the left ventricle. In both ventricles some of the clots have softened in the centre and contain a brownish fluid resembling anchovy sauce. In the left ventricle one of these thrombi forms a large rounded collapsible mass, measuring 5 cm. × 2·5 × 1·5 cm. attached to the apex, and containing brownish fluid in its centre. At the point of attachment the wall of the ventricle is thinned and extensive fibrous tissue strands extend through to the epicardium. Coronary orifices are normal. A few fine warty vegetations are present on the aortic valve. The pleuræ are adherent, and there are numerous areas of firm dark red infarcts in which thrombosed vessels can be seen on section. The left pulmonary artery is completely occluded by granular, pink, ante-mortem clot. The left subclavian vein is completely occluded by organized clot, whilst the right vein is filled with granular pink thrombus. A mass of clot is found in the superior vena cava extending from its branches. The axillary glands are enlarged and deeply congested. In the inferior vena cava there is a small mass of adherent clot below the diaphragm extending into one of its branches.

Bacteriology. Staphylococcus aureus is present in the heart's blood, the lung infarcts, and in the softened cardiac thrombus in the left ventricle.

Anatomical diagnosis. Myocarditis, acute and chronic. Endocarditis, acute. Mural thrombi, multiple, in ventricles and right auricle. Pulmonary infarcts. Fibrous pleuritis. Passive congestion of liver and kidneys. Thrombosis of subclavian veins. Thrombosis of pulmonary artery.

The case was regarded during life as one of infective endocarditis. In favour of this view was a heart with failing compensation, fever without other apparent cause, and the presence of hemiplegia.

There were, however, certain features throwing some doubt

on this view, although it seemed the most probable diagnosis during life. Amongst the doubtful points were the enlarged heart with gallop rhythm and increased blood pressure, more suggestive of cardiac hypertrophy with failing compensation than of endocarditis. The murmurs were of a temporary character. The diastolic murmur heard early in the disease was, in the light of the post-mortem examination, probably due to clot in the pulmonary artery temporarily interfering with the closure of the valve, whilst the apical systolic murmur was one of relative mitral incompetence. Although murmurs may be absent from first to last in endocarditis, yet it is usual for one or more to develop and persist during the malady. The absence of a palpable spleen, the low leucocyte count and the negative blood cultures, were also not in harmony with the usual picture of subacute infective endocarditis. Tenderness over the sternum, as described by Libman, was present at one stage of the malady but was not a prominent or persistent symptom.

The autopsy findings revealed an hypertrophied and dilated heart, corresponding to the signs found during life. The only trace of endocarditis consisted in a few minute verrucose granulations on the aortic valve. The important lesions, in addition to extensive vascular thrombi, consisted in ante-mortem greyish-yellow clot in three chambers of the heart, the ventricles, and the right auricle. The largest of these was situated near the apex of the left ventricle where the wall of the heart was thinned and fibrous and its centre was broken down and fluid and contained a growth of staphylococcus aureus. Several clots in the right ventricle also contained softened centres.

The thrombi in the veins of the neck and arm, first on the left and later on the right side, correspond to the cases described by Welch of venous thrombosis in cardiac disease. This writer shows that the thrombosis in heart disease usually attacks the veins leading from the upper extremity, and more frequently on the left than right side. The condition arises chiefly in mitral stenosis; its localization in the upper part of the body and especially on the left side is attributed by Welch partly to the greater length and obliquity of the left innominate vein, partly to pressure on the left subclavian vein by the dilated left auricle and dilated pulmonary vessels. An infective process appears probable as the immediate cause of the thrombus.

The presence of bacteria in a cardiac thrombus raises the question whether they are the cause or merely the secondary invaders of the clot. Cardiac thrombi are usually sterile, and form

in marantic conditions, particularly when any localized area of degeneration is present in the heart wall. That these conditions were present in this case does not, however, enable us to exclude the possibility of a primary infection. Thrombi in veins are much more frequently associated with bacteria than are cardiac thrombi. In the case under discussion, the thrombosis was so wide spread in the veins of the body that this condition must have been due to some cause acting in the blood itself, and although it cannot be positively stated that it was due to bacterial invasion, this seems to be the most probable hypothesis, and, if we admit such a view, it is logical to regard the cardiac clots as due to the same cause. The earliest clinical manifestation was the development of pulmonary infarction, and this may well have proved the starting point of the bacterial infection.

Ante-mortem cardiac clots are of common occurrence in the cardiac cavities. An excellent description of them was given by Bristowe in the *Trans. Path. Soc.*, vols. vii and xiv. He discusses the possibility of the softened puriform centres breaking down and causing pyæmia, deciding that such a result is highly improbable. References to infected cardiac thrombi are rare in literature, apart from the vegetations of endocarditis. Welch refers to a personal case of a child dead of scarlatina, in whom a streptococcal endocarditis of the mitral valve was associated with a softened thrombus in the right ventricle containing the same organism. The same writer quotes cases of white thrombi in the heart in tuberculosis and containing tubercle bacilli. In a case of typhoid fever, a disease in which cardiac clots are rare, under Dr. Gordon at the Montreal General Hospital, thrombi were found with a pure growth of typhoid bacilli. In all these cases it is, however, very difficult, indeed impossible, to say whether the organisms are primary or merely secondary invaders, and we have at present no conclusive evidence that cardiac thrombi, even when infected, owe their origin to the action of bacteria.

OBSERVATIONS ON FLYING SICKNESS, WITH SPECIAL REFERENCE TO ITS DIAGNOSIS

By H. E. Munroe, M.D., C.M. (McGill), L.R.C.P. & S. (Edin.), L.F.P. & S. (Glasgow)

Lieutenant-Colonel, Canadian Army Medical Corps

EVER since man has given up the gills of his marine ancestors, his motile activities have been, all those many centuries, in close contact with the earth. When gradually he assumed the upright posture he maintained that erect position, first through the sense of touch conveyed through his lower limbs coming in contact with the earth's surface; second, by the sense of sight conveying to his brain the outline and general proportion of surrounding objects; third, by means of that portion of his internal ear known as semi-circular canals. The impressions conveyed through these channels are carried to his cerebellum, and as a result of the co-ordination of those impressions he is able to orient his body in space. If, after a few weeks training, he is called upon to give up this motile habit, which has been the product of centuries in its formation, and asked to rise from the ground level to great altitudes; from comparative warmth often to intense cold; from relative quiet to a continual rush and roar; from a state of equilibrium to one of instability; from muscular and mental rest to highly skilled and nerve-trying evolutions; from safety to possible death; which is the experience of every aviator who manœuvres his machine to fight the enemy, or to dodge the shrapnel of an anti-aircraft battery. In this adventure he is subjected to intensive, intermittent and cumulative stimuli of a degree to which man has never been exposed before. These unfavourable, afferent impulses produce perceptions of the most trying character, so that the individual's *reserve force rapidly becomes used up*, and after many shows he becomes, to use his own expression, "dud". He lacks resolution, loses confidence in himself, becomes stale, and if he is not withdrawn for a rest, usually comes to grief. This grief includes the destruction of his machine, and if he is flying a two-seater, the life of his observer as well.

The average number of shows of any duration, in quick succession, which a man can stand, is about thirty. A hundred and fifty hours continuous flying, day after day, is sufficient to entitle the aviator to a rest, in order that he may regain tone generally, which is only possible if his organs are allowed to function in a normal environment, such as a change of scene associated with mental and physical rest.

When these facts are borne in mind, is it any wonder that there is a train of symptoms observed peculiar to aviators, known as "flying sickness", which may be more properly designated as "flying stress"?

If we observe the morbid effects upon the different systems due to flying, and the tests* used in recognizing those conditions, we shall more definitely understand the importance of clearly recognizing them, both from the standpoint of the individual, and in the best interests of the State as well.

While no gross pathological change takes place in this disease, it is yet readily recognized as we observe the marked alteration in function occurring in various organs. We are forced, therefore, to define flying sickness as a morbid condition brought about by flying, and indicated by the altered function of various organs.

The greatest stress falls, first, upon the cardio-respiratory system; second, the nervous system; and third, the muscular system.

The normal percentage of oxygen in the air is about 21 per cent., which remains more or less constant irrespective of the altitude reached. As one ascends the pressure decreases. It is well known that the pressure at the earth's surface is about 14·7 pounds to the square inch, while at 20,000 feet, for instance, it is less than one half that at the earth's surface. The oxygen tension, however, becomes correspondingly less with the fall in barometric pressure. Therefore there are few individuals who can ascend to altitudes greater than 20,000 feet while not using supplemental oxygen, without experiencing particularly unfavourable symptoms. So far as I am aware, the balloon ascension mentioned in Stewart's "Physiology", where the balloonist lost consciousness at 29,000 feet, is an indication of the stoutest aviator's scaling.†

* These tests may also be used in assessing the condition of candidates for flying in order to ascertain if they possess sufficient reserve force to enable them to become successful aviators.

† It has frequently been found that pilots who have suffered from concussion, or after stress of service, experience oxygen want at altitudes where they formerly flew without any indication of discomfort.

It is obvious then that with increased altitude, and lowered oxygen tension, the respirations become deeper, in order to maintain the necessary amount of oxygen to carry on the metabolic changes in the body. Those deepened respirations represent muscular effort, resulting in an increased production of CO_2. The heart beats more rapidly, and although called upon to do more work, which would obviously necessitate a greater supply of oxygen, the supply of oxygen is continually decreasing. The blood is therefore deprived of the necessary oxygen to carry on the body process, with the resulting accumulation of those substances which bring on intoxication. Dyspnœa and Cheyne-Stokes breathing are therefore quite common. Syncope symptoms occur among observers after muscular effort. The effects of this intoxication are pronounced on the nervous system; marked impairment of judgement is frequently noticed, though the person is quite confident that his mind is absolutely clear; perception is affected, while sensation remains normal; headache after landing, and insomnia frequently follows a period where the aviator is compelled to go repeatedly day after day upon long shows. These symptoms are associated with other signs of exhaustion, such as altered blood pressure, disturbed vasomotor system, associated hæmic murmurs, relative insufficiency, tremors, and increased reflexes. The appearance of these symptoms, to which may be added muscular weakness, largely depend upon the kind and amount of work done in a given time. Repeated and prolonged exposure to altitudes of 18,000 feet, with short intervals between flights, produce continuous cumulative stress, to which the human organism is compelled to give way.

It is obvious that forty hours in two weeks would have a more deleterious effect upon the individual than one hundred hours in three months. The effect on the nervous system has been summarized by Lieutenant-Colonel Martin-Flack, when he states that in addition to the physical strain incurred by the judgement displayed in a simple, straightforward flight, there is added quick response to changing atmospheric conditions, such as "Bumps", and in war-time flying there is superadded the strain of judgement involved in work to be done. He points out that this strain is not all cerebral in nature; there is a constant instreaming of impulse to the cerebellum concerned in the process of equilibration; to the medulla obligata in making adjustment of the respiratory and circulatory mechanisms; to the spinal cord for the co-ordination of the reflex movement in the static muscular work involved. All this in a rarified atmosphere.

Sickness at high altitudes may simply take the form of slight discomfort, frequently described as gasping for breath; or the aviator may complain of becoming giddy, or dizzy, while actual fainting in the air does sometimes occur. The gasping for breath, giddy and dizzy sensations are largely due to lack of proper oxygenation of the blood. It is well known that most pilots become mouth-breathers when they ascend to 10,000 feet or more. Fainting in the air is largely due to splanchnic flooding, with its accompanying cerebral anæmia, and is usually associated with cardiovascular debility, due in a measure to exhaustion. Cases have been known where aviators have fainted at 17,000 feet, and have regained consciousness after dropping a few thousand feet, the rapid return to consciousness no doubt being due to the stimulating effects of the rushing air, and the rapid increase in barometric pressure. Nausea and vomiting do not occur very frequently among experienced pilots. Vomiting is usually due to a dilemma from wrong impressions. It is also frequently associated with vertigo produced by a hyper-sensitive labyrinth, and consequent reflex action. Neuroses have been observed among pilots flying only at an altitude of 5,000 feet, indicating an irritable stomach and invariably associated with a past history of gastric irritability.

With regard to the ear: sometimes temporary deafness after high flying and dives of a few thousand feet, which may be associated with pain, dizziness and fainting, and disturbed equilibration, is noticed. This is brought about by the sudden change in barometric pressure and a delayed function of the eustachian tubes. For example, at 17,000 feet the pressure is reduced to about 410 m.m. Hg., as opposed to 760 m.m. at sea level. Therefore, if the eustachian tubes remain closed during an ascent the pressure on the outer side of the drum would be 410 m.m., and that on the inner side 760 m.m. The drum would bulge tensely outwards, and deafness would result. This, however, does not occur, as the increased pressure in the inner ear forces the eustachian tube open, and the pressure is equalized. In a descent the reverse is the case, that is, the drum bulges tensely inwards owing to the rapidly increased external pressure, and the eustachian tube remains closed, with the production of the symptoms mentioned, unless active steps are taken to adjust the difference in pressure. Airmen rapidly find that swallowing prevents this, and many of them chew gum while flying in order to facilitate this. Moving the jaws also assists. If these measures fail, holding the nose and ballooning the cheeks will produce the desired effect.

A uniform classification has been adopted for flying sickness by the British Army, consisting of the following nomenclature:

(*a*) Sickness at high altitudes.
(*b*) Fainting in the air.
(*c*) Cardio-vascular debility.
(*d*) Exhaustion.
(*e*) Vomiting.
(*f*) Vertigo.

EXAMINATION FORM

Report on:

Squadron,

HISTORY.
1. Previous
2. Flying History.

Service	Hours	Work	Shows	Average Height	Max'm. Height	Crashes
England.....	....	....	....	....	....	....	....
France.....	....	....	....	....	....	....	....

COMPLAINT.
PRESENT CONDITION.
1. Cardio-Vascular System.
(*a*) Heart.
(*b*) Pulse

	Rate per 15 seconds.	Per minute.	Increase.
Sitting.....	....	....	....
Standing.....	....	....	....
After exercise.....	....	....	....

(*c*) B. P. Systolic. Diastolic. Pulse Pressure.
(*d*) Jugular engorgement.
RESPIRATORY SYSTEM.
(*a*) Lung.
(*b*) Holding breath. Suffusion of face. Answer.
(*c*)

Vital Capacity	Supplemental Air	Expiratory force in m.m. m.m. of mercury	Sustaining 40 m.m. mercury by blowing	Pulse rate in 5 second intervals
....	....	....	....	....

(*d*) Oxygen Want.
Dryer Method.....feet.
Bag Method.....feet.
NERVOUS SYSTEM.
(*a*) Equilibration.....
(*b*) Reflexes.....
(*c*) Tremors.....
MUSCULAR TONE.
(*a*) Abdominal Wall.....
(*b*) Stomach Splash.....

SPECIAL SENSES.	Right	Left
Eyes.....	....	....
Ears.....	....	....

OTHER COMPLICATIONS.
DIAGNOSIS

Date.....

Method of examination. We have adopted a routine method of examination which we believe to be useful in the proper classification of patients. The flying history is of value, in that it indicates the amount and character of work accomplished. The history of crashes, with or without injury, is of importance, as the stability of the individual is likely to be detrimentally affected by a recent accident associated with concussion.

Heart. A mitral valvular lesion should not debar a man from flying if the heart muscle is in good condition, and no signs of enlargement exist, providing the airman passes the breathing and U-tube tests. Accidental, or so-called hæmic murmurs, are frequently heard over the valves of the heart, and in the veins of the neck, in aviators suffering from exhaustion due to flying stress. These are no doubt due to a vaso-constrictor inhibition. This condition of relative incompetency rapidly passes off, and one will find that the murmurs entirely disappear with a couple of weeks' rest. In some cases the so-called irritable heart is produced.

Pulse. A rapid pulse is frequent, and in those who are beginning to suffer from flying stress a low systolic blood pressure is the rule. After resting the systolic pressure increases, while the diastolic remains the same, with a resulting high pulse pressure. A diastolic pressure below 70, with a pulse pressure greater than 50, indicates that the aviator is unsuitable for flying. The standing pulse is markedly increased over the sitting pulse. There is a marked increase in the pulse rate after exercise, with a slow return to normal. An excellent pulse in an aviator is a small range between systolic and diastolic pressure; take for example 25, with a return to normal after exercise in fifteen seconds. The blood pressure should be taken with a mercury sphygmomanometer, in preference to any existing spring apparatus. A routine method of exercise has been adopted, which consists of having the individual raise himself on a chair ten times in fifteen seconds.

Jugular engorgement, augmented by abdominal pressure, is an indication of splanchnic flooding, and of cardio-vascular debility.

With regard to blood changes: It has been observed that the cellular elements are increased at the expense of the plasma.

So far as I am aware no case of nitrogen emboli, such as occur in caisson disease, has been observed after the most rapid ascent. This is not to be wondered at, when we consider that the reduction in pressure in an ascent is gradual, and that the aviator has not had his body fluids saturated with nitrogen by working under two

or three atmospheres of pressure, such as those employed in the caissons of bridge construction.

In examining the respiratory system, the usual clinical examination is made of the lungs. The vital capacity, and the supplemental air, are taken by meter. In taking the vital capacity, the aviator is asked to take a deep breath, and blow through the meter. In taking the supplemental air, the subject is asked to inhale and exhale normally before blowing through the meter. The vital capacity should be about 3,500 c.c. Aviators with a vital capacity below 3,000 c.c. cannot be regarded as fit subjects for flying. The supplemental air should be about 1,500 c.c.

Holding the breath. The aviator is asked to exhale as deeply as possible, and take a deep breath and hold it as long as possible. In this test, holding the breath sixty seconds is considered good; many hold it for seventy seconds, or more. Those who are unable to hold their breath for more than forty-five seconds are considered doubtful subjects for good flying. Any suffusion of the face is noted, and the candidate is asked why he gave it up when he ceases holding his breath, and the character of the answer is noted. The person who is likely to suffer from oxygen want is liable to give an abnormal answer, although an abnormal answer given by a person who holds his breath, say seventy seconds, cannot be considered an untoward sign; while an abnormal answer, after doing his uttermost for forty-five seconds, would indicate that the subject is not fit. The remark, such as "It is beastly", say after holding the breath for thirty seconds, indicates that the subject is not trying, or is a neurasthenic. The principle underlying the breath-holding test is that it is an indication of the aviator's vital capacity. As the oxygen content of the valveolar air becomes less and less, the length of time he holds his breath, without discomfort, indicates the height he may fly without discomfort. It is, in a manner, like his ascending higher and higher in progressively rarified air.

Expiratory force. In making this test the aviator is asked to blow a column of mercury in a U-tube to as high a point as possible. 80 m.m. is considered the minimum in this test. The subject is then asked to exhale, and take a beep breath, and sustain the column of mercury at 40 m.m. for as long a period as possible, holding the nose if necessary. The minimum for this test is considered be to forty seconds, being the time that a good pilot should sustain a column of mercury at the 40 m.m. mark. (In applying this test, care must be taken that the individual does not force the column of mercury to 40 m.m. and then insert his tongue in the tube.

This is readily detected by the lack of apparent effort on the part of the individual, and by the character of his pulse not changing during the indefinite period he would be able to sustain the column if his tongue were inserted in the tube). The pulse rate is taken in five-second intervals during the test. The pulse of a stout pilot will hold out steadily, for example, 7, 7, 6, 6, 6, 6; while that of a pilot suffering from exhaustion due to flying stress, will, after the first ten seconds, become a rapid running uncountable pulse. This test is also of value in testing the working power of the heart with valvular lesions so pronounced that after a mere stethoscopic examination one would consider them unfit for flying. Yet they frequently pass this test with amazing superiority, indicating a high standard of functional value. This test is also of value in assessing head injuries due to crashes, as they usually fail in the test if not fit. A good average aviator should hold his breath sixty-six seconds, and have a vital capacity of 3,800 c.c.; expiratory force of 610 m.m. of mercury, and he should sustain by blowing 40 m.m. of mercury for at least fifty seconds.

Oxygen want may be tested by a decompression chamber, such as that devised by Dr. Robertson, of Chicago, which consists of a steel cabinet, to which is attached a vacuum pump for removing the air, and an altometer. The Dreyer apparatus has the advantage over the chamber in that we may study the effects of decreased oxygen partial pressure without the influence of reduced pressure on the body generally. This apparatus consists of a motor for forcing the air through a meter into the breathing chamber through a tee pipe, to one limb of which is attached a nitrogen cylinder with a meter. A tube connects a Tizot mask with the breathing chamber. A mixture of atmospheric air and nitrogen is allowed to pass into the breathing chamber in order to change the partial pressure of oxygen at any desired rate, thus producing the same effect as if ascending in the air. Observation is made by means of a stop-watch. By this means a given volume of air and nitrogen is allowed to pass through their respective meters, and by a simple mathematical problem, the barometric pressure corresponding to a given oxygen partial pressure in the mixture is calculated.

The Flack bag is a more simple method, and very useful. It consists of a mouthpiece connected by means of a flexible tube to an absorbent cartridge for CO_2, which is attached to a 5-litre bag. A pass tube is attached to the bag to permit the testing of the contents. The aviator is given the bag, and after adjusting the mouthpiece he is asked to breathe through the nose and exhale into the

bag. When the bag is filled, a clip is put on his nose, and he is asked to breathe quickly in and out of the bag until he feels he can go on no longer. At this point he expires deeply into the bag, and the flexible tube is clamped. A sample of the air is taken from the bag by means of a vacuum tube. The percentage of oxygen in the sample is obtained, which represents the alveolar air, normally consisting of 16 per cent. oxygen at 760 m.m. pressure. If, for example, the bag content is 11·5 per cent., the altitude to which the aviator could fly without oxygen want would be indicated by the following mathematical problem:

$$\frac{\text{Normal atmospheric pressure} \quad 760 \quad \times \quad \text{Oxygen content of bag} \quad 11{\cdot}5}{\text{Normal oxygen content of alveolar air} \quad 16} = 546 \text{ m.m. Hg.} = 9000 \text{ ft. alt.}$$

Pilots suffering from oxygen want, who have fainted in the air, frequently experience the same sensation when using the bag. A first-class pilot will breathe the bag from three and a half to four minutes, until the percentage of ogygen becomes as low as 8 per cent.

The nervous system, from the point of view of stress, is undoubtedly greatly affected in individuals suffering from flying sickness "D" that is due to exhaustion. Equilibration may be poor, reflex increased, and a marked tremor may be observed. Equilibration is tested by having the patient stand erect, with eyes closed. He is asked to touch his nose with his right and left hands. Any swaying is noticed. Reflexes are recorded as "sluggish", "normal", "brisk" or "exaggerated". Tremors are tested by having the subject shut his eyes, and extend his arms with fingers separated and slightly flexed. Any tremor of eyelids, or fingers are observed and recorded as "absent", "slight" or "marked". One untoward experience may be sufficient to unbalance the nervous system of the stoutest pilot. I know a most efficient pilot, who, while flying in formation, met with an accident on a turn. At that moment the machine to the right and slightly above him slowed its engine, lost flying speed, and side-slipped into him, carrying away part of his tail, and destroying his control, causing him to tumble helplessly for a few thousand feet. He then managed to

get his machine into a spin and when within a few hundred feet off the ground was able to right the machine and make a safe landing. Although an excellent flier, his subsequent efforts to fly in formation were a failure. On one occasion he broke away from his formation, knowing that he would be pounced upon by enemy scouts, preferring this to the strain imposed upon him by continuing in formation. This pilot, after a rest, did excellent artillery observation work.

As regards muscular tone: the condition of the abdominal wall is graded as "firm", "fair," or "soft". A soft doughy abdominal wall, with a splashing stomach, in addition to denoting lack of tone by allowing the abdominal pressure to fall, aggravates any tendency to splanchnic flooding, and should be viewed with suspicion. It must of course be taken in conjunction with the condition of other systems.

Eyes. Upon admission into the Air Service, the aviator must have perfect stereoscopic vision, and ocular movements regular and identical. He must have 20/20 vision, without glasses, and normal ocular vision. It will be seen, therefore, that eye examinations are only necessary upon those aviators who may have received injuries from crashes, or other causes, perhaps the one exception being that an attack of jaundice may impair the night vision of pilots who are engaged in night work to such an extent as to render them useless for a time at least. Captain H. Gardiner-Hill, R.A.F., M.S., has devised a fixed focus dark chamber, with interchangeable white letters as the test object. Indirect light is gradually let into the dark chamber by means of moving a graduated slide with an angular opening, so that the light which is contained in the adjacent chamber is allowed to very gradually illuminate the test letters. A scale was made by using as a control a large number of normal visioned night pilots. Captain Gardiner-Hill has had a number of cases who, after having an attack of jaundice, were noticed first by their observers to have been unable to observe objects that were pointed out to them. This necessitated their going unnecessarily, and often dangerously low in order to bomb their objective. Upon returning to their dromes they frequently had difficulty in making good landings. This condition is supposed to be brought about by the action of the bile salts upon the redopson; in some cases there exists a definite retinitis.

Ear. All aviators are supposed to possess 40/40 hearing, and have a normal static balance apparatus. It is therefore necessary, if the aviator has undergone a recent illness which would have any

tendency to affect the potency of his eustachian tubes, to ascertain if these are still functioning. Also an attack of mumps is sometimes associated with internal ear disease. If he is recovering from the effects of a recent crash, associated with head injuries, one should see that the labyrinths are still functioning.

As pointed out by the physiologists, there is very strong evidence that the semi-circular canals are concerned, not in hearing, but in equilibration. A pigeon from which the membraneous canals have been removed, still hears perfectly well, so long as the cochlia is intact, but exhibits most profound disturbance of equilibrium. Some authorities claim that a dead labyrinth would be an advantage to an aviator, because normal labyrinths afford the possibility of vertigo and dizziness. This view is partially borne out by certain aviators' statements. It is well known that aviators occasionally get into a spin while flying for any length of time in dense clouds, as some of them claim that the only way they know they are upside down is when they find themselves hanging on their belts. If they find the wind striking them with terrific lateral force they realize they are in a side slip. Night pilots also claim that they depend largely upon the sense of sight. Even at considerable altitude there exists a visible cloud horizon. Taking these statements for what they are worth, I am nevertheless convinced that an individual whose labyrinths are not functioning, cannot fly a plane without disaster. A person who has never been sea-sick while travelling on the ocean, should have his internal ear thoroughly examined, as there is every possibility that he does not possess a normal static balance apparatus.

The Barany chair method is used to determine the presence, or absence, of an intact and normal active static apparatus. The principle underlying this test is that the movements of the endolymph in the semi-circular canals in a given direction, stimulates the sensitive hair cells in these canals, and produces definite phenomena: (1) Nystagmus; (2) Vertigo; (3) Past-pointing, and (4) Falling.

Nystagmus. The individual is placed in a Barany chair, with his head tilted thirty degrees forward, and eyes closed. He is turned to the right ten times in twenty seconds. The chair is suddenly stopped, and he is asked to look straight ahead at some distant point. There should occur a horizontal nystagmus to the left for twenty-six seconds duration. (This may be repeated to the left.)

Pointing Test. The individual stiting in the chair closes his

eyes, and touches the examiner's fingers, which are held in front of him. He then raises his arm to a perpendicular position; then lowers it, and touches the examiner's fingers. He is then turned to the right ten times in ten seconds. When the chair is stopped, the normal individual will past-point, or deflect to the right at least three times.

Vertigo. The person is turned to the right, and is asked to tell the examiner in what direction he is being turned. During the turning to the right ten times in ten seconds, he will say "I am going to the right." The chair is then stopped, and he will say at once, "I am going to the left." A stop-watch times him until he says, "I am standing still." The vertigo thus produced should last normally twenty-four seconds.

Falling. The individual's head is inclined ninety degrees forward, with eyes closed. He is turned to the right five times in ten seconds. On stopping, the person raises his head, and should fall to the right. As long as the head is kept in the first position, the vertigo remains horizontal, but on raising the head to an upright position the vertigo immediately becomes vertical, and the person imagines he is falling, throws himself to the right in order to correct what he supposes to be an abnormal position.*

Percentage of Various Types of Flying Sickness, Cases Hospitalized

A classification of all patients admitted to hospital suffering from flying sickness shows the following percentages:-

Sickness at high altitudes.	15·1 per cent.
Fainting in the air.....	9·4 "
Cardio-vascular debility...	20·7 "
Exhaustion...	39·6 "
Vomiting..	7·5 "
Vertigo.	7·5 "

It is of interest to observe that the highest percentage of cases are those due to exhaustion. They have invariably been stout pilots with a history of many hours flying, and have usually been regarded by their squadron commanders as "Full-out" aviators.

*Those interested in an exhaustive study upon the internal ear will be repaid in consulting "Equilibrium and Vertigo" by J. H. Jones, M.A., M.D., published by Lippincott & Company

Many of these have presented a condition, upon examination, which might readily have led to placing them in the cardio-vascular class, owing to the evident disordered action of the heart. The flying history, however, being taken into consideration, and the results of the U-tube test being properly interpreted, clearly demonstrated them as pilots suffering from exhaustion due to flying stress.

Treatment. Place a patient in an absorbing environment, free from flying associations; gradual exercise, walking, golfing, etc.; later, riding and tennis may be indulged in. The disordered vascular system rapidly rights itself with rest. Symptoms, such as flushed face, multiple murmurs and rapid heart, insomnia, headache and tremors disappear quickly when a patient is given a thorough rest under proper surroundings.

The value of the regular use of oxygen by all aviators while flying over 12,000 feet cannot be over-estimated.

Conclusion. The object in preparing this paper has been to correlate part of the existing knowledge, and record personal observations upon the conditions known as the various types of flying sickness. After a careful examination of a large number of aviators actually engaged against the enemy at various altitudes, we are forced to recognize that youths do not stand the strain imposed upon them as well as the more matured. Twenty-three to twenty-eight would appear to be the best range of age. The neurasthenic, and the temperamentally unfit are readily recognized and given any number of cases the diagnosis should be correct in almost every instance. The opinion arrived at as regards the flying capabilities of the individual concerned should usually agree with that of his squadron commander, that is, if the clinical methods described in this paper are accurately followed, these methods, after all, being largely applied physiology.

In conclusion, I wish to state that my best thanks are due Captain J. E. Bloomer, C.A.M.C., for much painstaking work upon flying sickness in the wards of No. 8 Canadian Stationary Hospital, where all aviator patients from the Independent Force, R.A.F., were admitted.

THE CARE OF MILITARY MENTAL CASES

By E. H. Young, *Major A.M.C.*

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IN this paper no attempt is made to describe a complete psychiatric military service, but merely to give some account of the methods adopted by the C.A.M.C. in the treatment of its mental cases, emphasizing the respects in which these methods differ from those by which civilian cases are treated, and pointing to certain lessons from military experience which may be usefully applied to civilian psychiatric practice.

The special interest and importance of the war from a psychiatrist's standpoint lies not in the production of novel symptoms or syndromes; the psychoses met with in the army are the every-day mental diseases of civilian practice. The war, however, by the enormous mass of clinical material presented under peculiarly favourable conditions for observation and study, has had the effect of stimulating and widening interest in psychic disorders and of advancing our methods of dealing with them.

In this field military medical men have many advantages over civilian psychiatrists. For example, the military patient comes under treatment earlier. In civilian practice it is possible for a psychopath to live more or less in harmony with his environment until his disease is well advanced, provided he remains in the same environment; moreover, the patient and his relatives are inclined to conceal ominous indications of impending mental disorder until the last possible moment. Active service on the other hand, makes unusual demands on adaptability, and unsuspected weaknesses soon obtrude, which officers and N.C.O.'s are quick to note and which they wisely seek to correct by turning on them all the limelight possible. This method is very effective with the normal and no doubt makes for military efficiency, but it drives the psychopathic and weakminded individual into constant conflict with military law, causing him to become a nuisance and a menace. A unit medical officer with the above facts in mind, realizing the danger of the psychic infection spreading, and being hampered

by none of the sentimental restrictions of his civilian confrère, takes the necessary action to place the patient under skilled observation at once.

Again, when the presence of a psychosis is recognized or suspected, a military patient can be admitted to hospital without any of the delays incident to troublesome and stigmatizing legal formalities, which act so powerfully as a deterrent to prompt treatment of the civilian patient. In the army, the procedure for admission to hospital is as easy and simple for the mental sufferer as for one with a pulmonary or cardiac condition. Thus the military system operates to get the patient under treatment at a stage of the disease when treatment is likely to be most effective.

The Cobourg Military Hospital is the psychopathic hospital for the C.A.M.C. in Canada. This hospital, of four hundred and twenty-five beds, receives the greater number of its patients in convoys from the hospital ship *Araguaya*, but many cases are admitted from other military hospitals in Canada and also from Department of Soldiers' Civil Re-establishment units. Overseas cases are taken over at the port of debarkation by an escort of one medical officer and a number of skilled N.C.O.'s detailed from the hospital; this escort supervises the care of the patients en route to the hospital, an attempt being made to acquaint them with the special regulations of the institution. The medical officer, after making a rapid survey of his patients and their medical documents, classifies and assigns them to suitable wards. All documents necessary for admission to hospital are completed on the train before the patients arrive at Cobourg; thus admission is completed expeditiously and without confusion. All patients are put to bed and remain there until the medical officer completes examination and prescribes treatment. Acute cases, and also chronic cases with acute exacerbations, are invariably confined to bed; no patient exhibiting manifestations of insanity of a conspicuous or objectionable character is permitted to go about the ward disturbing or offending other patients. With adequate treatment these symptoms soon moderate, and the policy of bed treatment has proven to be in the interests of both the disturbed patient himself and also of the other patients, whose condition under different circumstances might be aggravated by him.

For the purposes of this paper it is not necessary that the therapeutic facilities of the hospital should be described in detail. The building itself was originally intended for the treatment of neuroses, but it has proved almost ideal for the care of mental

cases. Those special architectural features designed to keep the patient under close custody and which happily are fast disappearing from all institutions for the insane are here little in evidence. Except on two wards the windows are without any special protection whatever. There are no padded rooms, in fact, the custodial appliances are little more than one would find in a general hospital. The huts, which contain 75 per cent. of the bed space are identical in structure and arrangement with the standard hospital hut erected in Canadian military hospitals; they have the usual equipment for ordinary medical, surgical and laboratory work, together with the necessary adjuncts for hydrotherapy, electrotherapy, *x*-ray work and medical gymnastics. Thus an effort has been made by those responsible for the construction and equipment of the hospital to make it resemble a general hospital as much as possible, and in its organization the same object is kept in view. There are seven medical officers on the staff—a number sufficient to give daily individual medical attention to each patient. All wards are in charge of nursing sisters by day and by night, which accounts in large measure for the absence of violence and unseemly conduct amongst the patients.

Therapeutic occupation and recreation is carried on chiefly under employees of the Department of Soldiers' Civil Re-establishment, with a staff consisting of a director, two instructors and seven ward aides. The work is divided into three grades, namely, bedside occupation, class work on the wards and employment in the work shops, an effort being made to have the patient progress from the lower to the higher grades. The same personnel direct the amusements, furnishing the music for the recreation hall events and for the hospital dining room. The importance of the work of the ward aides in arousing and stimulating the attention and interest of patients in danger of sinking into dementia cannot be over-estimated. It is scarcely necessary to add that this work is not for the monetary benefit of the hospital; its purpose is solely therapeutic. The nature and amount is prescribed by the medical officer and the effect recorded on the medical charts, and if the product of the patient's efforts has a commercial value, he and not the hospital reaps the two-fold benefit. There can be no doubt that for the class of patients in a reception hospital this form of occupation, being under medical control, is much to be preferred to the routine industries of the ordinary hospital for the insane where the effect of the industries on the cost of maintenance of the institution must be considered.

These patients also enjoy the same privileges as other classes with regard to examination and treatment by the district consultants for ordinary medical and surgical special sense and orthopædic disorders; for the treatment of dental conditions two officers are detailed from the Canadian Army Dental Corps; an advanced case of dementia præcox who lost a leg in France is supplied with an artificial limb just as his mentally normal comrades are; similar arrangements are provided in the case of other physical disabilities. Seldom have clinical psychiatrists had so much assistance from experts in neighbouring medical fields as have the staff of this hospital, and the effects of this advantage are reflected in the results obtained.

The fact that its charges are mentally ill does not prevent the general public from taking a great interest in the Cobourg Military Hospital. Members of the Red Cross, Soldiers' Comforts and St. John's Ambulance Societies and also other local organizations, and individual citizens, have contributed unstintedly of their time and means for the welfare and contentment of the patients. This free mingling of the public with the patients has been encouraged because it tends to prevent them from becoming institutionalized, counteracts asocial tendencies and dispels the feeling of sequestration from the outside world so common amongst those under custodial care. Those in charge of many civil institutions often complain that they are unable to afford these advantages to their patients, owing to the comparative inaccessibility of their hospitals and the apathy of the general public.

A word as to the disposal of the patients.

It has been the rule that no patient is to be discharged until in the opinion of the medical staff there is no reasonable probability of effecting a decided improvement or recovery. When this conclusion is arrived at, the patient is brought before the standing Medical Board, who, in practically all cases, recommend his discharge from the service, adding a statement as to whether he is fit to pass to civil life under his own control or with supervision of the social service branch of the Department of Soldiers' Civil Re-establishment or whether he should be admitted to a hospital for the insane as a custodial or parole case. Thus through the coöperation of the Department of Solidiers' Civil Re-establishment with the C.A.M.C., mental cases are assured of skilled supervision from the time they step from the *Araguaya* at Portland throughout the entire course of the disease. The responsibility for making recommendations for the disposal of this class of patient makes

unusual demands on the knowledge, insight and judgement of the members of the Medical Board. During the operation of the hospital, approximately eight hundred cases have come before them, four hundred of whom they have sent to civil life and no serious incident has come to light in the after history of any of these patients which would tend to reflect discredit on the Board's recommendation.

It would appear, therefore, that in the non-restraint system of caring for mental diseases, the C.A.M.C. has carried the torch farther than it has ever before been taken in this country. The patients have been cared for in a building very slightly modified from general hospital type with a general hospital organization. Iron bars, padded rooms, straight jackets, have been entirely replaced by skilled nursing and medical treatment. No insane patient has been locked in seclusion, and no occasion for mechanical restraint has arisen. Over twelve hundred cases have been admitted and cared for without a suicide, homicide, or serious accident of any kind. Over 50 per cent. of discharges passed to civil life under their own control, and a slightly larger percentage were discharged without pensionable disability. Although the hospital is located in a residential section of the town it has been carried on with no more inconvenience to its neighbours than any other large public institution would occasion.

The establishment of psychopathic wings in connection with general hospitals, especially in those associated with centres of medical teaching, is probably the most acute psychiatric problem in Canada to-day. Psychiatry is the only medical specialty to the demands of which the general hospital, with a few notable exceptions, has not responded. The need of the general hospital for a psychiatric department is admitted, as is also the fact that psychiatry requires a more intimate association with other branches of medicine for assistance in elucidation and solution of its own problems. The fact that the C.A.M.C. was able to so satisfactorily care for its mental cases under the conditions outlined above, lends support to the statement that there is no insurmountable obstacle to operating a psychopathic department in close association with any large general hospital and only in this way can the civilian insane obtain the same advantages in regard to humane and rational treatment as the military cases have received.

SHAKESPEARE AS A GUIDE IN THE ART AND PRACTICE OF MEDICINE

By Sir St-Clair Thomson, M.D.

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INTRODUCTORY.—Thomas Sydenham (1624-1689), the first great physician of the seventeenth century to profit by the work of Harvey and the Baconian method of reasoning, was asked by Sir Richard Blackmore what books of medicine he should study "Read 'Don Quixote'," was the unexpected reply, "it is a very good book; I read it myself still." The great Sydenham, in one telling sentence, thus taught us physicians that we will be incomplete practitioners of our art, if we limit our studies to the science of our calling. In the present day, with so much talk of the progress of scientific medicine, of the exact methods of the laboratory, of team work, of a state medical service and so forth, it is important for us to listen to works of wisdom which were written not for a day but for all time. Let us follow the advice of Sydenham, but by turning to the teaching of the great contemporary of the author of "Don Quixote". Cervantes and Shakespeare died on the same day, April, 23rd, 1616. Sydenham was born eight years later and the above story shows that our great poet was still awaiting the recognition of posterity; for if any of us, to-day, had to name the one author which every medical man should study deeply, with diligence and delight, surely it would be the greatest of our great Englishmen, William Shakespeare, who died three hundred and three years ago.

The Genius of Shakespeare.—This "myriad-minded man" astonishes everyone who is once attracted by his genius, and various professions and callings have produced books to show that he must have been a soldier, a sailor, a lawyer, an astronomer, a divine, a printer, a courtier, a traveller, a sportsman, an angler, a bird fancier, and a gardener, as well as a poet, actor and playwright!

An address in medicine delivered in Toronto before the Ontario Medical Association, May 28th, 1919.

Medicine in Shakespeare's Time.—His knowledge of the medicine of his own time, his approval of the better part of it, and his reasonableness in praising principally the physiological side of it, is remarkable when we remember that he lived in an age when witchcraft was firmly believed in; when amulets were worn to ward off disease, and charms, incantations and philtres were used for the cure of it. In Shakespeare's day the astrologer was ready to raise a devil or cast a horoscope for a fee. Pills made of the skull of a man who had been hanged, a draught of spring water from the skull of a man who had been murdered, the powder of a mummy, the oil of scorpions, the blood of dragons, the entrails of wild animals, and all sort of filthy dejecta were in those times recommended for special diseases, while tumours were supposed to be cured by stroking them with the hand of a dead man. It was only in the year 1616, and in the very week preceding Shakespeare's death, that William Harvey first enunciated his memorable discovery to the Royal College of Physicians, in these remarkable words:—"Whence it follows that the movement of the blood is constantly in a circle, and is brought about by the beat of the heart."

I refer to this birth of modern medicine, and to the primitive practice of Elizabethan days, so that we can better appreciate the marvels of our greatest genius. But having dealt elsewhere with his knowledge of medicine, chiefly with the scientific side of it,* I propose this evening to consider how this layman can help us physicians in the art and practice of our calling.

Esteem of our Profession.—Cerimon in *Pericles* is both a physician and a nobleman, so that the good social status of the medical man is thus accepted and illustrated. No nobler panegyric of our profession could be written than that put in the mouth of Cerimon:—

Cerimon.

By turning o'er authorities, I have
(Together with my practice) made familiar
To me and to my aid, the blest infusions
That dwell in vegetives, in metals, stones;
And can speak of the disturbances that Nature
Works, and of her cures; which doth give me
A more content in course of true delight
Than to be thirsty after tottering honour,
Or tie my treasure up in silken bags,
To please the fool and death.

Pericles, iii, 2.

It is to be noticed that Shakespeare, in these lines, recognizes, even

*Transacs. Medical Soc., London. Vol. xxxix., 1916.

in those Elizabethan days of superstitition and wholesale drug-taking, the *vis medicatrix naturæ*, and gives the quite modern idea of curing our patients:—

With good advice and little medicine.
Henry IV, Part II, iii, 1.

He repeatedly indicates his belief in the efficacy of our efforts:—

Give physic to the sick, ease to the pain'd,
The patient dies, while the physician sleeps.
Lucrece, 129–130.

although we can never escape final defeat:—

But I consider,
By medicine life may be prolong'd, yet death
Will seize the doctor too.
Cymbeline, v. 5.

Medical Note-taking.—A justification for our case-books is found in the wise note-taking of the cautious Scotch doctor who attends Lady Macbeth,—

I will set down what comes from her to
satisfy my remembrance the more strongly.
Macbeth, v. 1.

And further commendation of note-taking is found in one of the sonnets,—

The vacant leaves thy mind's imprint will bear,
. . . . . .
Look, what thy memory cannot contain.
Commit to these waste blanks, and thou shalt find
These children nurs'd, deliver'd from thy brain,
To make a new acquaintance of thy mind.
These offices, so oft as thou wilt look,
Shall profit thee, and much enrich thy book.
Sonnet 77.

Patients sometimes appear to resent our inquiries when we take notes on their past medical history. Shakespeare fully approves our custom,—

There is a history in all men's lives,
Figuring the nature of the times deceas'd:
The which observ'd, a man may prophesy,
With a near aim, of the main chance of things
As yet not come to life.
Henry IV, Part II, iii, 1.

Bedside Manner.—When called to a case we doubtless begin by the simplest and most friendly investigation, in the manner of Pinch in the *Comedy of Errors*, who, although an irregular practitioner, had quite the bedside manner when he says,—

> *Give me your hand and let me feel your pulse.*
>
> *IV*, 4.

Functional and Organic Disease.—We will have to distinguish between early disordered function and disease, as is well shown in the following dialogue,—

> *King Henry.*
> *Then you perceive, the body of our kingdom,*
> *How foul it is; what rank diseases grow,*
> *And with what danger, near the heart of it.*
> *Warwick.*
> *It is but as a body, yet, distemper'd,*
> *Which to his former strength may be restor'd,*
> *By good advice, and little medicine.*
>
> *Henry IV, Part II, iii*, 1.

Physical and Mental Conditions.—With all our patients we should never forget they are sick folk, so that we will neither judge them as we would healthy men, nor let ourselves be carried away by their morbid fears. Lady Constance recognizes this in herself when she exclaims,—

> *For I am sick and capable of fears.*
>
> *King John, iii*, 1.

King Lear excuses the behaviour of his son in-law by attributing much of his conduct to physical conditions,-

> *No, but not yet;—may be, he is not well:*
> *Infirmity doth still neglect all office,*
> *Whereto our health is bound; we are not ourselves,*
> *When nature, being oppress'd, commands the mind*
> *To suffer with the body: I'll forbear;*
> *And am fallen out with my more headier will,*
> *To take the indispos'd and sickly fit*
> *For the sound man*
>
> *King Lear, ii*, 4.

Even when driven nearly mad, poor Lear seeks for a pathological explanation of his daughter's ingratitude,—

> *Then let them anatomize Regan; see what breeds about her heart. Is there any cause in Nature, that makes these hard hearts.*
>
> *King Lear, iii*, 6.

Digestion.—Supposing we find that the case is one of digestive trouble, the following regulations of Shakespeare must be remembered,—

> *Unquiet meals make ill digestions.*
> *Abbess in Comedy of Errors, v. 1.*

> *In food, in sport, and life-preserving rest,*
> *To be disturb'd, would mad or man or beast.*
> *Abbess in Comedy of Errors, v. 1.*

> *Now good digestion wait on appetite,*
> *And health on both!* *Macbeth, iii, 4.*

Some cases of dyspepsia may be benefitted by a stroll in the open air soon after meals. Patroclus addressing, on behalf of his chief, the princes who made an afternoon call, says,—

> *He hopes it is no other*
> *But, for your health and your digestion sake,—*
> *An after-dimner's breath.*
> *Troilus and Cressida, ii, 3.*

Fainting.—In the treatment of an ordinary fainting attack, how slow is the willing but untrained public to act on the first principle so well expressed by Shakespeare three hundred years ago in the following lines:—

> *Stand from him, give him air; he'll straight be well,*
> *Henry IV, Part II, iv, 4.*

> *So play the foolish throngs with one that swoons;*
> *Come all to help him, and so stop the air*
> *By which he should revive.* *Measure for Measure, ii, 4.*

Open-air Treatment.—Three centuries before the profession had thought of open-air treatment, Shakespeare had advised,—

> *The most wholesome physic of thy health-giving air.*
> *Love's Labour's Lost, i, 1.*

and recommended it as one of Nature's best restoratives,—

> *I pray you give her air,*
> *Gentlemen,*
> *This queen will live; nature awakes; a warmth*
> *Breaths out of her.* *Pericles, iii, 2.*

> *His highness yet doth speak; and holds belief*
> *That, being brought into the open air,*
> *It would allay the burning quality*
> *Of that fell poison which assaileth him:*
> *Let him be brought into the orchard first.*
> *King John, v, 7.*

Then, on being carried into the orchard of Swinstead Abbey, King John's first exclamation is,—

Ay, marry, now my soul hath elbow-room.

Change of Scene and Climate.—The advantages of travel, a sea voyage, or change in surroundings, particularly in neurasthenia, are brought to our recollection by the King of Denmark when speaking of the projected trip to England of his somewhat trying step-son, Hamlet,—

Haply, the seas, and countries different,
With variable objects, shall expel
This something-settled matter in his heart

Hamlet, iii, 1.

Mirth and Distraction.—When considering therapeutic measures we not uncommonly meet with a case which only requires the following pleasant prescription,—

For so your doctors hold it very meet,
Seeing too much sadness hath congeal'd your blood,
And melancholy is the nurse of frenzy;
Therefore they thought it good to hear a play
And frame your mind to mirth and merriment,
Which bars a thousand harms and lengthens life.

The Taming of the Shrew, Induction, Sc. 2.

Recreation.—If recreation is neglected there must ensue depression, ill-health, and susceptibility to infection and disease,—

Sweet recreation barr'd, what doth ensue
But moody and dull melancholy,
Kinsman to grim and comfortless despair,
And, at her heels, a huge infectious troop
Of pale distemperatures and foes to life?

Abbess in A Comedy of Errors, v, 1.

How wise, therefore, is the following joyous resolution,—

Let me play the fool,
With mirth and laughter let old wrinkles come;
And let my liver rather heat with wine,
Than my heart cool with mortifying groans.
Why should a man, whose blood is warm within,
Sit like his grandsire cut in alabaster?
Sleep when he wakes? and creep into the jaundice
By being peeush?

Merchant of Venice, i, 1.

Jaundice. The last quotation may help to remind us that

depressing emotions should be looked for as causes of jaundice or intestinal toxæmia, and this is also referred to in the line,—

What grief hath set the jaundice on your cheeks?
Troilus and Cressida, i, 3

Alcohol.—Our patients—at least in damp, not to say, wet England—are apt to ask our advice on the subject of alcohol. It is as impossible to saddle Shakespeare with extreme views in regard to alcohol, as it is in reference to any other subject on which there is no finality He is too great an artist, and too deep a philosopher, to be didactic. He is certainly no advocate of intemperance. Total abstainers may claim him as a supporter on the strength of his commendation of "Honest water, which ne'er left man i' the mire" (*Timons of Athens, i,* 2), a quotation which is inscribed on the fountain erected in Stratford-on-Avon by American admirers. But he migitates this commendation with the proviso that water is "that which is too weak to be a sinner", and the rigid prohibitionist may be met with the well-worn quotation, "Dost thou think because thou art virtuous there shall be no more cakes and ale?" Shakespeare repeatedly paints in vivid colours the loathsomeness and degradation of alcoholic excess, and he is evidently in favour of temperance. How often have we to urge our patients to,—

Ask God for temperance; that's the appliance only
Which your disease requires.
Henry VIII, i, 1.

Wine is praised, but always with discretion,—

Come, come, good wine is a good familiar creature, if it be well used; exclaim no more against it.
Othello ii, 3.

Good company, good wine, good welcome
Can make good people.
Henry VIII, i, 4.

I am not sure if here, in Canada, you had a No-treating Order, or even know what it means. Well, during the war, in the Motherland, in order to reduce the unnecessary consumption of alcoholic beverages it was ordained by the Defence of the Realm Act that it was illegal and punishable for any man to stand another a drink. Cassio would have welcomed this order, for when Iago says to him, "Come, lieutenant, I have a stoop of wine," he replies, "Not to-night, good Iago; I have very poor and unhappy brains for

drinking; I could well wish courtesy would invent some other custom of entertainment." (*Othello*, ii, 3). Another character (Hostess Quickly) did not require a No-treating clause to support her when she said, courageously,—

I'll drink no more than will do me good,
For no man's pleasure, I.
King Henry IV, Part II, ii, 4.

Diet.—Shakespeare tells us that over-eating and starvation are equally unhealthy. Nerissa, in the *Merchant of Venice* exc'aims, "For aught I see they are as sick that surfeit with too much, as they that starve with nothing" (*i*, 2); and the British belief in plenty of beef is somewhat shaken by Sir Andrew Aguecheek when he says,—

I am a great eater of beef,
And I believe that does harm to my wit.
Twelfth Night, i, 3.

We can agree with the Second Lord in *All's Well That Ends Well* (*iii*, 1), when he asserts,—

Second Lord,
But I am sure, the younger of our nature,
That surfeit on their ease, will day by day,
Come here for physic.
All's Well That Ends Well, iii, 1.

Tobacco.—How glad would we be to have Shakespeare's opinion on tobacco! Unfortunately, I find no mention of it, though snuffing is referred to.

Sleep.—There is one function of the *mens sana in corpore sano* which I never appreciated to its full value until taught by Shakespeare, and that is the importance of sound, sufficient and regular sleep. He shows a profound regard for the honey dew of slumber, great Nature's second course, chief nourisher in life's feast, the balm of broken senses, the best of rest, Nature's soft nurse, the season of all natures—as he lovingly describes it. He praises death because it gives us "silence and eternal sleep" (*Ti us Andronicus*, *i*, 2). Indeed, it has been suggested that the poet himself must have suffered from sleeplessness, so vividly does he describe the horror of insomnia, so wisely does he regard the invoking of sleep, and so warmly does he praise the value of being able to steep our senses in forgetfulness. These readings impel me to suggest that we might all take a greater care and interest in this balm of hurt minds,

sore labour's bath, and that we often fail to appreciate the great value of Nature's second course in the cure of disease.

Sleep that knits up the ravell'd sleave of care,
The death of each day's life, sore labour's bath,
Balm of hurt minds, great nature's second course,
Chief nourisher in life's feast.

Macbeth, ii, 2.

The best of rest is sleep,
And that thou oft provok'st; yet grossly fear'st
Thy death, which is no more.

Measure for Measure, iii, 1.

O sleep! O gentle sleep!
Nature's soft nurse! how have I frighted thee,
That thou no more wilt weigh my eyelids down
And steep my senses in forgetfulness?

Henry IV, Part II, iii, 1.

For sleep to be beneficial a man must be able to "thank God for his happy dreams," in which "the slumber of the body seems to be the waking of the soul", as opposed to what Macbeth calls "the affliction of those terrible dreams that shake us nightly" (*iii,* 2).

We should frankly tell our patients that the sweat of industry is the best soporific,—

Come; our stomachs
Will make what's homely, savoury; weariness
Can snore upon the flint, when rusty sloth
Finds the down pillow hard.

Cymbeline, iii, 6.

Suggestion.—We all practise suggestion, even unconsciously. Not a prescription is written which is not fortified—or weakened—by it; not a dose of medicine is swallowed without it; not a prognosis given which is not enhanced or else enfeebled by it. Shakespeare tells us,—

They'll take suggestion as a cat laps milk,
They'll tell the clock to any business that
We say befits the hour.

The Tempest, ii, 1.

and we all know that Hamlet fooled poor Polonius by suggestion. Even in the pain of old scars, the influence of suggestion can be exercised. Marcius says,—

I have some wounds upon me and they smart
To hear themselves remember'd.

Coriolanus, i, 9.

and this remarkable power may be utilized to resist even the onset of death,—

Thy conceit is nearer death than thy powers.
For my sake, be comfortable;
Hold death awhile at the arm's end.

As You Like It, ii, 6.

Encouragement.—We can never practise medicine very successfully unless possessed with courage and the art of inspiring it. Our fellow men are not themselves,—

When nature, being oppress'd, commands the mind
To suffer with the body.

and therefore we must encourage them with Iago's words,—

How poor are they that have not patience!
What wound did ever heal but by degrees?

Othello, ii, 3.

Sympathy.—It is a truism to recall that a large part of the physician's power lies in his capacity for sympathy. The loneliness of those who suffer is chiefly alleviated by the understanding and fellow regard which it is our duty and happy privilege to dispense,—

Who alone suffers, suffers most i' the mind,
Leaving free things and happy shows behind;
But then the mind much sufferance doth o'erskip
When grief hath mates, and bearing fellowship.

King Lear, iii, 6.

We should anticipate a sick man's fears and we will be quicker in getting in sympathy with a sufferer if we detect that he shares Macbeth's feeling that,—

Present fears are less than horrible imaginings.

Macbeth, i, 3.

We may have to tell a patient that,—

The fault, dear Brutus, is in ourselves not in our stars.

Julius Cæsar, i, 2.

when we don't get well quicker, and his self-resistance may be raised by reminding him that,—

Our remedies oft in ourselves do lie,
Which we ascribe to heaven.

All's Well That Ends Well, i, 1

But stern philosophy such as that which tells us that,—

Men must endure
Their going hence, even as their coming hither,
Ripeness is all.

King Lear, v. 2.

is best kept for ourselves and our friends when in robust health!

Needless to say, the important thing is to avoid being merely platitudinous, and see that we do not attempt to "patch our grief with proverbs" (*Much Ado About Nothing, v,* 1), for,—

Every one can master a grief, but he that has it.
Much Ado About Nothing, iii, 2.

After all,—

'Tis all men's office to speak patience
To those that wring under the load of sorrow;
But no man's virtue, nor sufficiency,
To be so moral when he shall endure
The like himself.

Much Ado About Nothing, v, 1.

Hope.—The adage "while there's life there's hope" is as old as the world. *Dum spiro spero.* Shakespeare reminds us that,—

The miserable have
No other medicine, but only hope;
I have hope to live and am prepar'd to die.
Claudio in Measure for Measure, iii, 1.

True hope is swift, and flies with swallow's wings;
Kings it makes gods, and meaner creatures kings.
Richard III, v, 2.

Prognosis.—Next in importance to diagnosing his case correctly, a patient looks to us for guidance by our prognosis. Now Shakespeare advises that,—

Since the affairs of men rest still uncertain,
Let's reason with the worst that may befall;
Julius Cæsar, v, 1.

because,—

To fear the worst oft cures the worst.
Troilus and Cressida, iii, 2.

In other words, let us always anticipate the worst that may happen, but not expect it.

On the difficult and painful duty so often laid upon us, of giving a gloomy prognosis, what better guide of conduct can a physician have than that given by Shakespeare?—

Though it be honest, it is never good
To bring bad news; give to a gracious message
A host of tongues; but let ill tidings tell
Themselves, when they be felt.

Antony and Cleopatra, ii, 5.

He also advises us that we might often spare ourselves the pain of breaking bad news, and our patients the shock of hearing it, if we do but remember that,—

He that but fears the thing he would not know,
Hath, by instinct, knowledge from others' eyes
That what he fear'd is chanced.

Henry IV, Part II, i, 1.

and often we must sadly feel that,—

Yet the first bringer of unwelcome news
Hath but a losing office; and his tongue
Sounds ever after as a sullen bell,
Remember'd knolling a departing friend.

Henry IV, Part II, i, 1.

Old Age.—The diseased conditions peculiar to old age demand the consideration of all of us. The characteristics of our "sad humanity" (*Sonnet* 65), as it falls into the "sere the yellow leaf" (*Macbeth*, v. 3), and "declines with the vale of years" (*Othello*, *iii*, 3), are wistfully, sadly and pitifully described by Shakespeare. "Old men forget" (*Henry V*, *iv*, 3), and we should be considerate for their memories. Age may reveal a "poor, infirm, weak and despised old man," like King Lear (Act iii, Sc. 2), and we must be tender to them. They may be foolish or garrulous, and we must be tolerant.

I am a very foolish fond old man.

You must bear with me.
Pray you now, forget and forgive; I am old and foolish.

King Lear, iv, 7.

A good old man, Sir, he will be talking; as they say, when the age is in, the wit is out.

Much Ado About Nothing, iii, 5.

Shakespeare reminds us that although the seniors should attract "that which should accompany old age, as honour, love, obedience,

troops of friends" (*Macbeth*, *v*, 3), still, the physical characteristics of increasing years are not always alluring The Chief Justice tells poor Sir John Falstaff very rudely that his appearance of age no longer tallies with his young and joyous spirit,—

> Chief Justice. *Do you set down your name in the scroll of youth, that are written down old with all the characters of age? Have you not a moist eye? a dry hand? a yellow cheek? a white beard? a decreasing leg? an increasing belly? is not your voice broken? your wind short? your chin double? your wit single? and every part about you blasted with antiquity? and will you yet call yourself young? Fie, fie, fie, Sir John!*
>
> *Henry IV, Part II, i,* 2.

Death.—Before "we have shuffled off this mortal coil" and start for,—

> *The undiscover'd country, from whose bourn*
> *No traveller returns.*
>
> *Hamlet, iii,* 1.

we are reminded by Shakespeare that,—

> *Yet in this life*
> *Lie hid more thousand deaths; yet death we fear,*
> *That makes these odds all even.*
>
> *Measure for Measure, iii,* 1.

and he comforts us all by declaring that "the sense of death lies most in apprehension" (*Ibid*, *iii*, 1).

Should we strive to prolong life in the old when afflicted with hopeless forms of disease? Do we not sometimes feel inclined to echo the exclamation of the Earl of Kent in regard to poor, old, worn-out Lear?—

> *Vex not his ghost; O, let him pass! he hates him,*
> *That would upon the rack of this tough world*
> *Stretch him out longer.*
>
> *King Lear, v.* 3.

Life.—And so in his profound knowledge of human life and human nature, from the day,—

> *When we are born and cry that we are come*
> *To this great stage of fools*
>
> *King Lear, IV,* 6.

until the

> *Last scene of all*
> *That ends this strange eventful history.*
>
> *As You Like It, ii,* 7.

we see why Shakespeare is, and always must be, one of the greatest, masters of medicine. His astonishing acuteness of observation

his familiarity with the ways and thoughts of frail humanity, his discrimination of our diseases according to age, sex and circumstance, his sensitive regard for "life's fitful fever" (*Macbeth, iii,* 2), his sweet reasonableness and deep human sympathy, his profound knowledge of those parts of physiology and pathology which may be studied in the daily life of the street, the market, the tavern, the court, the camp or the home, are subject to no errors of investigation; they are eternally true. Skakespeare has epitomized the whole gamut of human life in the twenty-eight lines pregnant of the humourously melancholy Jacques,—

All the world's a stage,
And all the men and women merely players:
They have their exits and their entrances;
And one man in his time plays many parts,
His acts being seven ages. At first the infant,
Mewling and puking in the nurse's arms.
Then the whining school-boy, with his satchel,
And shining morning face, creeping like snail
Unwillingly to school. And then the lover,
Sighing like furnace, with a woful ballad
Made to his mistress' eye-brow. Then a soldier,
Full of strange oaths, and bearded like the pard,
Jealous in honour, sudden and quick in quarrel,
Seeking the bubble reputation
Even in the cannon's mouth. And then the justice,
In fair round belly with good capon lin'd,
With eyes severe and beard of formal cut,
Full of wise saws and modern instances;
And so he plays his part. The sixth age shifts
Into the lean and slipper'd pantaloon,
With spectacles on nose and pouch on side;
His youthful hose, well sav'd, a world too wide
For his shrunk shank; and his big manly voice,
Turning again towards childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange, eventful history,
Is second childishness, and mere oblivion,—
Sans teeth, sans eyes, sans taste, sans everything.
As You Like It, ii, 7.

A Master of Medicine.— Hippocrates tells us that life is short, art is long and experience is fallacious. The science of medicine progresses, but human nature remains the same, it cannot be altered by Acts of Parliament, and the foundations of physiology are fixed. Shakespeare's plays will be read by physicians when every medical treatise of the present year will be lying on the dust heaps of literature, and the works of this master of medicine will continue to be studied by future generations until "there shall be no more death, neither sorrow nor crying, neither shall there be any more pain".

TREATMENT OF BURNS BY TINCTURE OF IODINE

By O. F. Mercier, M.D.

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FOR a couple of years past, convinced by an accidental experience, of the value of the tincture of iodine in the treatment and cure of burns, I have adopted its use systematically in my hospital service, as well as in my civil practice, and to-day, after different experiences in a number of varying cases from the slightest to the most severe, I thought it would be advisable to appear here before your honourable meeting and give you my sincere opinion upon this treatment.

I have said that my first experience was an accidental one, and I should have added that this experience was obtained upon myself.

One day, I had the misfortune to burn a small spot of about three quarters of an inch diameter upon the palmar surface of my left hand; this burn was of the second degree and excessively painful. Having on hand in my office a small bottle of the 10 per cent. tincture of iodine, I covered the burn with it. Of course, the application was painful, but I felt immediately a complete relief; it stopped the pain at once and the next morning, I was so well that, having some operations to perform at the Notre-Dame Hospital, I was able to attend to my duty and operate that morning upon several cases which were on the list, and that without the least pain. I could wash, brush my hands, keep them covered with the rubber gloves for a few hours, without any inconvenience, and the blister never burst, but dried up in two or three days, leaving under it a tissue of new formation of normal colouration and suppleness.

Judging from this result, and not knowing that this treatment had already been tested by Baumgarten in France, I started using it systematically in the Notre-Dame Hospital, having in my mind that, if it could do for a small thing, most probably it would be satisfactory in more severe cases. The result, fortunately, con-

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firmed to the utmost my expectations, and to-day I am here in a position to tell you that I consider it to be the best treatment I ever used against this accidental disease.

As far as I can understand, the treatment was rejected in France on account of the fear that it might be injurious to the kidneys, but in all the different cases in which I have used it, I have constantly watched closely the function of that organ, and in no case could I detect any trouble, clinical, functional or chemical. In fact, in one of my last cases, the patient was a young lad of about twelve years old, who was certainly burnt over at least the half of the surface of his whole body, and even in that case, no trouble whatever could be detected with his kidneys.

Another objection that one can raise is the pain caused by the application. I have of course to admit that the treatment is painful during its application, and for the few minutes (say four or five) following it, but as soon as the pain so caused is over, the pain that always accompanies the burn is completely suppressed and the patient feels a complete relief. In one case to which I would like to draw your attention, a woman of about forty years old, having had her two arms, forearms and hands badly burned to the second degree, and in some spots, going as far as the third degree, I tried treating her on one arm with antiseptic and anæsthetic ointment, and on the other one, with the tincture of iodine, and she herself asked to have both arms treated with the iodine, feeling so much difference in the comfort caused by the above treatment compared with the ordinary antiseptic applications.

At about the same time, a man was brought into the hospital, ward St. Joseph, with a bad burn covering the surface of his face and head, neck and shoulders, hands and wrists. In this case, I started the iodine treatment immediately after his entry in the hospital. The temperature which went high from the start, 104 degrees, was brought down to the normal in four days. Eight days after the accident, the crust formed by the burn, epidermis hardened by the fluid, started to fall off and fourteen days after the accident, he was able to leave the hospital completely cured, with a fine pink, supple, new skin, replacing all the one that was destroyed by the burn.

I have had since then three other cases of the same seriousness, location and surface, and the three responded faithfully to my treatment and developed and recovered in the same way. In fact, in the Notre-Dame Hospital, the treatment demonstrated so well

its own value, that it has been adopted by all my confrères of the hospital, and it is now systematically used there.

I think that, in our day, it would be very hard to find a surgeon, a medical doctor, or any scientific man, who would not admit that iodine is one of our best antiseptics, if not the very best of all. Its power of penetration into the skin, its power of destruction of the germs, are the two qualities which place it at the head of the list. Another advantage of it is that, if you want to have all its effectiveness and if you use it on the skin, you can apply it just as well and even better on a skin that has not been previously washed, because the alcohol in which the drug is dissolved is quite sufficient for the cleaning and would have a better effect on a dry or greasy skin, than on a skin covered with soap and water.

The same problem presents itself in the treatment of burns. Everybody knows how painful, difficult and long was the first dressing in all the other treatments made upon the burnt surface.

The cleaning of the wound, the removing of dirt, burnt epidermis and so on, was practically impossible, not only from the fact of its own difficulty, but also from the fact of the pain occasioned by that long and tedious manipulation. With this new treatment, there is nothing of that sort; the dressing is so simple, so quick, that in a few minutes, it can be made with all its effectiveness. Of course, I observed that to use this treatment, one must follow a very precise and systematic technique, because one has to remember that the application is painful, and that the pain caused by that application will only last a few seconds, and that besides, the application must be liberally made, so I remarked that the tincture of iodine must be largely spread over all the wound, I should say, in one jet. The way to do it is very simple. Take a piece of absorbent cotton, soak it heavily in the tincture, holding it with a forceps, and put on a coat of it, liberally, all over the wound. If the patient is too nervous and too sensitive, give him first a hypodermic injection of morphine, or even it may be worth while giving him gas-anæthesia. The worst would be if, being afraid of hurting him, you should make the application lightly, gently, with a tampon not sufficiently soaked with the preparation, and apply it spot by spot, small surface by small surface, increasing so, the time required for dressing, and instead of taking just a few seconds, or at the most two or three minutes to complete the whole thing, you would take, say fifteen or twenty minutes, and then have a wound that would not be properly covered and soaked with the fluid. I insist upon this point because, every time I entrusted the

treatment to the hands of one of our nurses or sisters, they all made the same error, and I had to insist, in order to convince them, and even, at times, do it myself before them.

Another very important point is the quality and strength of the preparation. I observed that the best is the one of the French Iodex, or the 10 per cent. solution in pure alcohol, 90 degrees. The alcohol must be very pure, and everybody will easily understand that it would be very dangerous to use tincture of iodine prepared with methylated spirit, or the one that we have on the market under the name of "Columbian". This latter would not only irritate and injure the tissue, but would be dangerous by its absorption and that to the utmost.

You will most probably enquire what sort of dressing is to be applied, after the coat of tincture of iodine has been spread over the wound. A simple sterile dressing with gauze compresses, and a bandage to keep it on, is quite sufficient. In fact, I have remarked that the solution is a dressing in itself, and in a few cases, I ventured to use no dressing at all, besides the liquid application, and kept the part open. The explanation is very simple; the wound, after the application, covers itself with a thick, brown crust, which protects the raw tissues completely.

A very interesting experience which contributes to the illustration of the effectiveness of the treatment is the fact that in cases of burns of the face, I could not, of course, apply it on the eye-lids, fearing to injure the globe of the eye, and I confined myself to using around there a preparation of argyrol or sylvol, but in every case, the whole face was already healed many days, while the eyelids were still unhealed, and the worst of it was that the eyelids healed slowly, giving rise to ectropion. The treatment must be done once every day.

As I said above, when the above-mentioned crusts fall, they give way to a fine new tissue, pink, neat, having all its suppleness, and in no case had I any of those retractile scars which, ordinarily, as everybody knows, are one of the worst complications following burns. I have no doubt that the worst enemy is the infection, not only because it delays the cure, but also because it causes the pain, causes the general infection which generally shows itself by the regular and steady increase of temperature, loss of appetite, weakness and so on; and then gives way to the formation of that scar tissue, which in mostly all cases is bound to retract sooner or later. With this new treatment, nothing of the sort. After a few days, four or five, the temperature comes down to the normal and

this, gradually and steadily, and stays at the normal until the complete cure is over. The patient keeps his normal general condition of health; he sleeps very well all night, because the pain, which exists in every case treated by the other methods, is absent; in fact, the only pain is the one during the application, and it is easy to manage it, but as for the pain of the burn itself, there is none whatever.

The treatment, to have all its effectiveness, must be made as soon as possible following the accident, It is easy to understand that it is more difficult to disinfect an infected wound than to prevent the infection This is a fact that I have always experienced, and I consider it to be of the highest importance.

If the method is used on burns of the first and second degree, it is a complete treatment and you do not need anything else, but as everybody knows, there may always be spots or surfaces where the burn would have gone more deeply, and attained the third degree, injuring the whole thickness of the skin, and sometimes the adipose tissue, and even the muscles. For those deep burns, I apply, just the same, the tincture of iodine in the same way as I do for the surrounding surfaces, but of course, after a certain time, the destroyed parts which have been killed by the fire, must detach themselves, and this surface of sphacelus leaves a wound more or less large, which has to be treated by the ordinary antiseptic dressings. To complete the cure and prevent the retractile scars, now is the time to appeal to grafting of new skin. This is what I do, using the Thiersch method.

In cases where the surface of the burn is covered by blisters, it is important not to open them, and to let them dry up under the effect of the iodine. They dry up in a few days and do not bring any complication whatever.

In a few cases, when the patient was too sensitive, or when for any other reason the pain was too great, I replaced the tincture of iodine by the vapours of nascent iodine, but of course, in every one of the cases, the first treatment was always made by using the tincture of iodine, in the way above described, and I used the nascent iodine only for the subsequent treatments, which must be applied then once a day, as in the case of the tincture.

I feel so highly convinced of the great and practical value of this treatment, that in coming before your meeting, I come with only one object in view, which is that of trying to popularize the method, knowing that it will be such a great help to this class of poor patients. When one imagines or represents to himself the

pain, the dangers of all sorts that followed these terrible accidents, when we were using most of the other treatments, it is easy to understand the amount of the services that would be rendered to our poor humanity, if it were possible to decrease in any degree, the said calamity. There is another question, which has in itself its own importance, and this interests mostly companies and employers. We all know the amount of responsibility that falls upon them under the law providing for indemnity to be given to employees in these cases. If by this method, it were possible to diminish the amount of incapacity resulting from the accident, I think it would become of great interest to accident companies and employers, that this method be generalized, it would save them certainly large amounts of money and it would, at the same time, prevent the employee from remaining a lame man for the rest of his life.

I would like to see all the manufacturers, and even the fire brigades knowing this fact, and knowing also that the best thing they can do for any one of their employees who should have the misfortune of having one of these terrible accidents, would be to have on hand a bottle of tincture of iodine, ready to be used as the first, the best of all emergency treatments, that could be applied to the case.

Only a few weeks ago, a case was brought to the hospital. A man, a labourer, burnt in the face, neck and head by an explosion of gasoline. I do not know whether it was from the fact that they had heard of the treatment, that they did it, but they did it at any rate. The patient sent to the hospital had only to be continuously treated along the same lines, and following the rules; in two weeks, he was in a condition to resume his work.

Whether it be for a small or a large burn, I insist that I consider this treatment to be the best. About two months ago, a child of twelve years old was brought to me as a private patient, after a burn covering certainly over half the surface of his body. I saw him in hospital only the next day after the burn, and some ointment, I do not know what kind, had already been used on it. Nevertheless, I ordered the iodine treatment. The poor little thing went on as well as possible for seven or eight days; the only pain endured was the one at the moment of the applications. Unfortunately, I had the parents against my treatment and I was obliged to submit to their desire. After two or three days, the parents realized what I had told them: that the dressings were nearly as painful as the iodine dressing, but that these dressings were not

quieting the pain of the burn. The temperature started going higher; the general condition of patient got worse and worse every day, and on the eleventh day the final result that I was expecting came, and the poor boy died.

Although at least half of the surface of the body was burnt, I feel convinced that if I could have kept on with the iodine treatment, I would have saved his life. But one fact remains with all its importance. Urine analysis, and taking the quantity of urine, was done every day during the applications, and I could not notice any clinical symptoms of kidney alterations, neither by the clinical symptoms nor by the laboratory reports.

Since the antiseptic value of iodine has been discovered and admitted by the profession in general, this chemical product has rendered us all sorts of services. We use it for disinfecting the skin before operations; we use it for disinfecting some surgical wounds; we treat the wounds with it, and everybody admits that its value is of the utmost importance. This is another application in which I sincerely believe it is going to prove again that it is the most important, the most powerful, and the most harmless of all our antiseptics.

Next to underfeeding, the appalling death rate from disease in Central Europe is said by a distinguished physician, who has just been travelling through these regions, to be due to lack of soap and all aids to cleanliness. Everywhere in Austria, Hungary, Poland, Bohemia, Russia and also Germany, typhoid, spotted typhus, dysentery, scurvy and tuberculosis have increased; modern hygiene is unable now to localize these scourges because of lack of disinfectants, linen and soap, and above all, need of disinfecting stoves or chambers, in which infected clothes can be placed and kept at a temperature to destroy the vermin which are propagators of spotted typhus. In Hungary, for instance, these disinfecting chambers exist, but there is no coal to heat them, whereas in Czecho-Slovakia there is the coal, but there are not the disinfecting chambers. The danger of travelling in Austria, Poland, the Ukraine and neighbouring parts of Europe is great, because it is impossible to prevent soldiers and civilians from being herded together in extremely crowded trains. Ordinary trains are breeding grounds for spotted tyhpus and other diseases because they are full of vermin-covered soldiers.

CRANIOPLASTY

By Charles H. Gilmour, M.B., M.R.C.S.

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IN the few minutes at my disposal this evening, I would like to direct your attention to a most interesting disability which has been brought from a rare to a common condition as a result of the recent war. Of the many surgical problems requiring special study and thought, none is more deserving than that relating to the repair of cranial defects.

Prior to the present war, a patient with a cranial defect was one of the most uncommon conditions to be seen by the general surgeon. As a result of the past four and a half years of intensive fighting we are faced with a condition that looms fairly large in the total surgical casualties. I am unable to get the exact percentage of cranial defects which are returning to Canada, but during my service at Orpington, I found on looking through the records that of a total of one thousand, three hundred and seventeen surgical cases in the hospital in the month of January, 1918, twenty-eight were suffering from cranial defects, or 2 per cent. of the total. This may be above the average, as in this case sixteen had been admitted directly from France and twelve had been transferred from Imperial hospitals in England.

The after-effects of wounds of the skull are pronounced, and the majority of cases suffer from permanent disability. Their symptoms are such that they are usually unable to take up any civil occupation permanently and may become subjects of Jacksonian epilepsy, or even in their morbid depressed mental condition, end in a state of traumatic insanity. I have said they are unable to take up any civil occupation permanently because I have seen several who have refused operation on account of a small opening which was deemed unnecessary at the time to repair, and return after some months of work, stating they were unable to carry on because of the pronounced local manifestations and asking that repair of the skull might be carried out so that they might be relieved

Read before the Ontario Medical Association, May 29th, 1919.

of the constant consciousness of deficient skull and the ever present fear of further injury to the pulsating depression.

Symptoms. In reviewing the histories of a large number of brain lesions, we find, following the injury, there has usually been a period of unconsciousness followed by different degrees of paralysis in one or more limbs or a complete hemiplegia. Depression is a prominent symptom and a constant dread of further injury to the pulsating cavity is found. Headache is present in all cases, sometimes severe and constant or in other cases intermittent and aggravated by exertion. Vertigo is always found which is increased by quick movements. The memory is poor and they cerebrate slowly. By studying the focal signs we can localize the part of the brain affected. Lesions of the cortical areas of the pre-central region are easily recognized. A paralysis of the corresponding muscles on the opposite side of the body being produced, at first the paralysed muscles are flaccid but spasticity soon develops. In some cortical lesion for reasons not yet understood the paralysis remains of the flaccid type. Rarely we find the whole motor area destroyed producing a cortical hemiplegia. More generally the lesion affects one or more groups of muscles, and occasionally all the muscles of one limb are paralyzed, producing a cortical monoplegia. In the course of time these paralyses may partially clear up. Irritation of the motor centres may cause a localized Jacksonian epilepsy in the group of muscles on the opposite side of the body which are supplied by the centres implicated.

The fit may remain localized involving only one set of muscles or may spread to affect all the muscles of the body with accompanying unconsciousness and tongue biting. Accompanying the monoplegia or hemiplegia, we may have a motor aphasia when the motor speech-centre in Broca's convolution is implicated. In lesions which involve the posterior part of the superior and middle temporal convolutions, we may not find a definite word deafness; that condition in which the patient is unable to understand spoken words, though he may be able to read and speak. This symptom may not be present, because the cortical auditory centre is bilateral and one temporal lobe may be severally damaged without producing focal signs. Lesions of the occipital lobe if unilateral, cause an homonymous hemianopia; extensive bilateral occipital lesions will cause total blindness. In other cases, word blindness is formed from a lesion of the left angular gyrus. Lesions of the post central gyrus will show sensory changes of the parts corresponding the motor centres in the precentral gyrus. For example, an injury

over Rolandic area two inches to the left of the middle line would produce complete paralysis of right uper limb, motor aphasia with sensory changes showing in the loss of touch and joint sense. The compass test would show an increase on the affected side and astereognosis (that is, the loss of appreciation by touch of familiar objects) would be present. Lesions of the frontal cortex anterior to the motor centres, even if extensive, may produce few or no symptoms; occasionally there results a change in the temperament or intelligence of the patient. Sir James Purves Stewart has recently reported the following case. This patient sustained a through-and-through transfrontal wound, the bullet entering through one temporal fossa and passing out through the other; the only focal symptoms were a transient monoplegia of the right face which cleared up completely in a couple of weeks; shortly after, during convalescence, he ran away with a friend's wife. Uncharitable observers may perhaps be sceptical as to the traumatic origin of this incident. There is no history of a frontal lesion in the lady.

It is the purpose of this paper to discuss the repair of the cranial defects mentioned for the relief or alleviation of symptoms enumerated. In this series of cases, I have the records of twenty-two performed in my service at Orpington in 1917 and 1918 and thirty-five by Colonel Primrose and staff in the military wards of the Toronto General Hospital. In this series bone was used in twenty-eight cases and cartilage in twenty-nine cases. We do not propose to discuss here whether periosteum is simply a limiting membrane or has the power to reproduce bone, or whether the grafted bone is really viable and inherently carries its own osteogenic powers or merely acts as a scaffold along which the Haversian vessels grow, carrying with them osteoblasts and osteoclasts. Whatever is the ultimate fate of the graft, we do know from the all-important clinical standpoint, bone is a most excellent material with which to repair a cranial defect. The same may be said of cartilage.

That ancient proverb, "There is nothing new under the sun," is borne out when we find it recorded that Jobi Meekren in 1682 replaced a cranial defect with a piece of dog's skull which healed perfectly. He was later forced by the church to remove the graft under ban of excommunication.

In deciding which material, bone or cartilage, is to be used, the size and position of the defect must be studied, also the possibility of the patient having other disability. It is not infrequent to find a man with a cranial defect has also lost one leg or has received a

severe chest wound. Briefly, bone gives the greatest amount of support and can be securely moulded to close large defects, especially in the parietal region. On the other hand, cartilage will mould to the contour of the head better in the frontal and occipital regions and is more viable in the presence of infection.

Operation. A very careful preparation of the head must be carried out. In shaving the head, extreme precaution must be exercised not to leave any small cuts in the scalp in the vicinity of the scar. The head is now prepared by the usual iodine method. At the time of operation, the entire head is covered by two layers of gauze and a tourniquet applied tightly over this. If the tourniquet is properly applied, there will be a minimum amount of hæmorrhage from the scalp. If the scar is small and not too firmly adherent to the dura mater, a wide horse-shoe flap is preferable, but if the scar is large and thin and firmly adherent to a large surface of dura mater, it is best to excise the entire scar. In dissecting off this scar, particular care must be taken not to penetrate the dura. Should there be an escape of cerebro-spinal fluid, it should be immediately sutured. The pericranium is next isolated and reflected well back on the outer table by a crucial incision. This gives an excellent view of the field. The dura mater will be seen to be firmly adherent all around the edges of the inner table. This must be completely freed and any rough or sharp edges of bone rounded with bone forceps. It is most important that no projections are left which might cause a cortical irritation and future epilepsy. The outer table is now bevelled off for a distance of half an inch with an electrical burr, leaving the vascular diploe as a bed for the graft.

If it has been decided that cartilage is to be used, a vertical incision over the sixth, seventh and eighth costal cartilages is made, one inch external to the edge of the sternum and sweeping in a semi-circular fashion along the costal margin for two inches. This gives a free exposure. To remove the cartilages, a knife bent at an angle of 110 degrees is best. Grafts one half to two thirds the thickness of the costal cartilage are removed, care being taken to have the graft longer than the length of the cranial defect. To provide a bed for the grafts, a trellis-work of cat-gut is run through the pericranium from side to side and the grafts are threaded through this, their ends lying on the diploe. They are immobilized by chromic cat-gut, suturing the ends to the pericranium. The pericranium is now drawn over the graft as much as possible and the scalp sutured leaving a small drainage tube in one corner for twenty-four hours.

If bone is to be used, the diploe will be exposed as above. The leg having been prepared, the skin is reflected, leaving the inner surface of the tibia completely exposed. The graft with periosteum is now removed, the thickness of the outer table and the width of the tibia one inch longer than the length of the cranial defect. The crest of the tibia is not removed because this weakens it and a fracture might result. If the cranial defect is wider than the inner surface of the tibia, two pieces of graft may lie side by side. To immobilize the bone grafts, holes are drilled through the inner table of the skull through which chromic catgut is threaded and these pass through similar holes in the graft and are then tied. The pericranium is drawn over and the scalp sutured.

Conclusion. Following the repair of cranial defects, a marked improvement is seen in the temperament and intelligence of the patient. The melancholia and lack of interest disappear. The previous fits are relieved and the headache either entirely disappears or occurs only occasionally in a mild form. The patients gain in strength and they have a feeling of security previously lacking. I have followed the progress of a large number of these cases and find that from being invalids suffering from a permanent disability, they are able to earn a good living in any suitable capacity in the labour market.

Rev. W. W. Perett, the head of the Moravian mission at Hopedale, Labrador, announces that epidemic influenza, measles and small pox are working havoc throughout Labrador. Almost the whole population of some of the settlements has been wiped out within a few weeks. The village of Hebron lost eighty-six people out of a population of about one hundred, while the village of Okak lost two hundred and seven out of a population of two hundred and sixty-six. Altogether, four hundred and eleven persons perished of these diseases in the territory over which Mr. Perett has charge.

ON BACKWARD DISPLACEMENTS OF THE UTERUS

By A. C. Hendrick, M.A., B.M., F.R.C.S., F.A.C.S.

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UNTIL very recently there has been no definite doctrine in regard to "uterine displacements". though the importance of the subject to the practitioner and to the patient can hardly be overestimated. The practitioner often attached undue importance to some discovered uterine displacement, indefinite, it is true, to his mind and experience; and many of the ills of the female sex, due more properly, to some other cause are attributed to the uterus being out of place.

It is with the object of attempting to make the doctrine a little more definite that this paper is written.

I propose to deal with the problem under the following headings:

1. To state the accepted usual position in the true pelvis of the normal adult virgin uterus.
2. To describe as clearly as possible the anatomical and mechanical reasons for this "position".
3. To explain the usual causes for any dislocation of the uterus from this position.
4. To define the usual symptoms.
5. Outline the treatment.

I. The usual position of the normal adult virgin uterus in the bony pelvis.

In the fully developed adult virgin the organ is a flattened pear-shaped body with an upper and larger free end, and a lower extremity which projects into the vagina, dorsal and ventral surfaces and right and left margins partially covered by peritoneum.

The uterus is usually described as consisting of a fundus, body, isthmus and neck or cervix, being three inches long, two inches wide and one inch thick.

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The adult uterus does not occupy any definite fixed position in the pelvis but possesses a considerable range of mobility. The chief factors that influence its position being the bladder in front and the rectum behind. With these organs partially distended the uterus, between them, comes to lie approximately in the axis of that part of the true pelvis in which it is situated.

The ventral surface of the uterus is in contact with the bladder; when the bladder empties the fundus is directed forward and the ventral surface downwards. The result is a slight anteversion of the uterus, taking the axis of the pelvis as the "neutral line". Since this movement affects the fundus and body more than the more fixed cervix, there is a slight angle formed in the region of the isthmus on the ventral surface and this position is described as an anteflexion.

The uterus is seldom quite medial in position and may be rotated on its own axis. It is entirely in the true pelvis. The lowest portion of the cervix is about on the level of a plane joining the spines of the ischium, but slightly in front of, or behind this line, and slightly above a plane uniting the lower border of the symphysis pubis to the tip of the coccyx. However, gravity, posture and distension of the bladder or rectum influence this position slightly.

II. The anatomical and mechanical reasons of what factors keep the uterus in the position above described have been much debated, and it is proposed to show that the true solution is simplified by an extended knowledge of the development of the uterus and its neighbouring structures.

In the human embryo at about the beginning of the second month, a structure named the mesonephros or Wolffian body is well formed. This structure is composed of tubules and the Wolffian duct. It is the functional kidney in the amphibians (frogs), but only temporary in the reptiles, birds and mammals. Its function is later taken over by the permanent kidney, which arises from the hindermost segments of the Wolffian body.

The Wolffian body, in a human embryo of 5 mm. long, at the second month, projects as a prominent ridge under the peritoneum from the dorsal and lumbar regions of the coelom, near the mesentery of the gut, extending on each side of the coelom (body cavity), from the posterior cervical region, where the diaphragm is developed, to the pelvis behind, where the ridges become approximated. The forward projection of the peritoneal covering of the Wolffian body, after the atrophy of that body, contributes to the formation of the

plica vascularis, and the backward projection contributes to the formation of the genital cord.

To the inner side of the Wolffian body in the lower dorsal region lies the genital ridge from which the ovary will be developed. This ridge is also attached to the dorsal wall of the coelum by a mesentery—the genital mesentery.

This mesentery at its anterior end fuses with the Wolffian mesentery forming the plica vascularis, which becomes the future overico-pelvic ligament of the ovary. Its posterior extremity, with the mesentery of the Wolffian body, is continued to the inguinal region as the plica inguinalis, and later becomes the ovarico-uterine or ligament of the ovary, and the round ligament.

On the lateral aspect of the Wolffian body and near its anterior end arises the Mullerian duct, as a thickening of the coelomic epithelium. This soon shows a longitudinal depression, which, deepening at its posterior end, becomes converted into a funnel shaped depression the future ostium of the Fallopian tube. From the caudal end of this, a duct grows backward in close relation to the Wolffian duct.

In embryos, about the middle of the second month, the two ducts lie in a free fold—the uro-genital fold—projecting from the outer side of the Wolffian body, the Mullerian being to the outer side.

Behind the Wolffian body this fold, merging with the Wolffian body mesentery, passes on to the lateral wall of the contracted part of the coelomic cavity, which will later form the pelvis.

Here, the folds from opposite sides meet in the middle line. The four ducts are thus brought close together and are embedded in a mass of tissue, the mesenchyme, forming the genital cord, and thus dividing the pelvic coelom into two cavities, anterior or utero-vesical, and posterior or utero-rectal.

The Mullerian ducts as they pass into the genital cord cross over the Wolffian ducts and come to lie close together between them. Within the genital cord the Mullerian ducts fuse, but behind, the lumina remain separate for a time, and the fused walls terminate in an epithelial thickening. The Mullerian eminence is derived from the vaginal bulbs, and projects into the uro-genital sinus between the opening of the Wolffian ducts.

The upper free portions of the Mullerian ducts become the Fallopian tubes, while the fused portions form the foundation of the uterus and vagina. The vagina is formed from a solid down growth of epithelium from the vaginal bulbs which form the Mullerian

eminence. According to Quain, the epithelium of the Mullerian ducts gives rise only to the epithelium of the genital tracts. The musculature and connective tissue elements of the mucous membranes of the uterus and vagina are derived from the mesenchyme of the genital cord.

Chipman states: "The effective supports of the uterus are subperitoneal and are developed from the undifferentiated mass of mesenchyme of the genital cord." All authorities are agreed that at least the outer muscular coat of the adult uterus, all the smooth muscle, connective, and elastic tissue, surrounding the vessels and invading the basis of the broad utero-ischial, and round ligaments, are derived from the mesenchyme of the genital cord. The ontogeny of the genital cord is thus of supreme importance.

What are the effective supports of the uterus and vagina which are derived from the mesenchyme of the genital cord? It must be remembered that these supports are sub-peritoneal. From behind forward they are: The utero-ischial, utero-ischio-sacral or true utero-sacral ligaments which must not be confused with the peritoneal folds bounding the pouch of Douglas, *i.e.*, false utero-sacral ligaments. This paired structure, composed of smooth muscle, fibrous, and elastic tissue derived from the same source as similar tissue of the uterus, extends across the pelvis from one ischial spine to the other. It is attached laterally to the sides of the pelvis, in the erect posture being almost vertical, and medially to the perineal body. This latter attachment is due to the down-growth of the uro-rectal septum of Retterer. On the way across the pelvis they grasp the uterus firmly at the isthmus, creating and maintaining the vaginal fornices.

These structures have been named by Tweedy, of Dublin, the uterine tendons, which, one must confess, has some argument in its favour, an analogy being found in the muscle of Treitz. The *musculis suspensoreus duodeni* has a distal attached end of smooth muscle fibres, an intermediate elastic portion, and a proximal attached portion, composed of both smooth and striated fibres.

The utero-ischial ligaments represent probably the dorsal attachments of the mesentery of the Wolffian body, *i.e.*, the dorso lateral region of the genital cord, and when the secondary caudal arterial arch, which passes lateral to the Wolffian duct, is developed it furnishes the root of the hypogastric artery. This structure, *i.e.*, the utero-ischial ligament, is further reinforced by the fibrous sheath of the vessels, also derived from the mesenchyme passing in from the side wall of the pelvis to the uterus and vagina.

III. Supports derived from the regression or fibrous degeneration of the levator ani group of muscles, when the caudal appendage is lost. It is a law that when a contractile tissue can no longer contract it degenerates into fibrous tissue. Examples may be found where muscular tissue is attached between two bony points which were once movable in relation to one another, but which are now fixed, for example—the sacro-spinous ligament, a portion of the coccygeus muscle, and the uro-genital diaphragm, a portion of the *transversis perinei perfundus* muscle.

This support has been named by Sir Auckland Geddes, the arcus tendineus fascia pelvis. It is a stout, bow-string-like structure, attached anteriorly to the posterior aspect of the body of the pubis by three or four processes, and behind to the spine of the ischium and wing of the sacrum, and through the sacro-spinous ligament to the sacral bodies. Laterally it is attached to the parietal fascia, slightly above the origin of a few fibres of the levator ani muscle.

This arcus tendineus, if traced medially, is found to split into three layers: (*a*) The anterior or vesical layer passes to the bladder, and to the front of the urethra and vagina, forming the true ligaments of the bladder, *i.e.*, (1) the pubo-vesical and the lateral pubo-vesical binding the bladder firmly to the pubic bones, but separated near the medial borders to form the cavum retzii. (2) The urethro-vaginal ligaments which bind, inseparably, the urethra and vagina.

(*b*) Posterior or rectal layer passing behind the rectum.

(*c*) A medial layer, the recto-vaginal, which fuse across the medial place, intervening between the vagina and rectum and extending downwards to the perineal body, *i.e.*, the junction of the rectum with the anal canal.

The anterior or vesical layer blends around the lateral wall of the vagina with the medial or recto-vaginal. The arrangement of this fascia is the most important anatomical fact, for there is here a potential outlet to the pelvis for childbirth. The bladder and anterior vaginal wall are held firmly by the vesical layer, whilst the posterior vaginal wall can move freely on the recto-vaginal fascia.

The former can rise in the pelvis whilst the latter descends. The superior concave border of the junction of the vesical and recto-vaginal portions of this fascia fuses with the base of the utero-ischial ligaments, forming the cardinal ligaments of the uterus. These two structures, *i.e.*, the utero-ischial ligaments and the arcus

tendineus fascia, are the true anatomical supports of the uterus and vagina, and they resemble in action a fibro-muscular hammock. In the bony pelvis, however, there is a portion of the levator ani group of muscles which suffers only slight regression. This is the pubo-coccygeus muscle. It lies at a slightly lower level than the supports above described, and acts as an auxiliary support for any undue or sudden strain, and also as a sphincter for the urethra, vagina, and termination of the rectum.

IV. Knowing our anatomy should make the understanding of backward displacement of the uterus, or in fact any displacement, more intelligent.

(*a*) Backward displacement: 1. When the supports derived from the mesenchyme of the genital cord are chiefly involved. (*a*) Congenital, depending upon the orientation of the genital cord or pelvic septum, rare and unimportant.

(*b*) Shortening of the utero-ischial supports, for example, by infection and contraction. This is diagnosed on bi-manual examination—the ligaments are found tense and the cervix rather far back.

(*c*) Retro-version. Leaving out neoplasms and pelvic infiltrations, sub-involution is the commonest cause. The following symptoms are found:—(1) The patient is parous; (2) The supports, derived from the genital cord tissue, react in the same manner as the uterine tissue. Therefore, if the uterus is sub-involuted, *a priori*, the supports are also.

Therefore, the utero-ischial ligaments soften in sub-involution and are ductile, allowing the cervix to descend in the pelvis. This places the heavy uterine body at a mechanical disadvantage and so it may turn backwards owing to the intra-abdominal pressure.

On bi-manual examination the cervix may be found closer to the examining finger and pointing downwards and forwards. The body is absent from the anterior fornix, and if retroflexion is added, may be felt in the posterior fornix.

V. *Treatment.* 1. Taking the commonest cause found, viz.: sub-involution: Treat the sub-involution. (*a*) By rest, tonic and hot douches. (*b*) Prevent further infection by repair of any old lacerations of the cervix or perineum. (*c*) Assist involution of the ligaments by pessary support. (*d*) After a fair trial of these measures, or when the uterus cannot be restored to its normal position bi-manually, open the abdomen, free the uterus, and perform the indicative operation, which in the child-bearing age

is usually round ligament shortening. If after the child-bearing age, do a fixation operation.

2. When the fascial supports are also at fault, the symptoms are different. There will usually be: (*a*) A cystocele; (*b*) A beginning prolapse of the uterus.

Treatment. Improve the general health. 2. Operative treatment, child-bearing age. (*a*) Repair old laceration. (*b*) Repair the cystocele. (*c*) Perform some round ligament operation. (*d*) After the menopause, a fixation operation is indicated.

P.S.—The paper was illustrated by lantern slides.

The sum of one thousand pounds has been sent to London, England, by the committee of the Elizabeth Garrett Anderson Memorial Fund to endow a "Canada" bed in the Memorial Hospital, as the result of the generosity of subscribers and the receipts from the lecture given by Professor Stephen Leacock. An illustrated parchment, the work of the president of the Ontario Society of Artists, accompanies the donation.

Editorial

A NEW START

FOR some time past the unsatisfactory terms of the contract made years ago with our late publishers, have given rise to much trouble and disatisfaction, not only to the editors and to the finance committee of the association, but also to the members who felt that the journal was not as representative as it might be, and that the advertisements were not as reputable as were to be desired in a journal bearing the name of our Association. Many efforts were made by the various committees appointed from time to time by the association to manage the journal, to obtain greater power of control, but all such efforts proved ineffectual until recently. A proposition placed before the members at the Quebec meeting, and referred by them to the finance committee with power to act, has now been accepted. The present publishers have been bought out, and a contract has been made with the printing house who in the past have done our printing, to continue to do it. A small committee has also been appointed to act for the Association, and control all the advertisements and to edit the journal. The finance committee are hopeful that within three years the journal will be free from debt, and on an entirely satisfactory basis.

With this October issue the new arrangements for publication go into force, and the new editorial board takes control. It is the desire of the new board to develop the journal in many ways and make it representative of the thought and work of the medical profession throughout Canada. To do so, however, it must have the active assistance of every member of the sub-editorial committee who were appointed

to represent the various provincial associations. The editorial committee in Montreal will meet regularly and frequently; they will supervise all papers presented for publication; any deemed not suitable will be returned promptly so as to afford the writer the opportunity of having it published in another journal; they will take complete control of all editorial matter; they hope to arrange for personally written retrospects in all departments of medicine and surgery by men who can speak with authority in their special departments. The committee will also be glad to receive communications from every medical society and provincial university in Canada, telling of work in progress or actually accomplished. It is their desire to make every number interesting and attractive. It may take time to accomplish all their plans, but the editorial board enter upon this task for the ensuing year with determination and hopefulness.

A MILITARY PSYCHOPATHIC HOSPITAL

MOST of the problems that confront the practitioner are met with either in simplified or in diversified form, in military medicine, and in many cases the methods which the army, from the necessities of its constitution, adopts, are helpful in the solution of the parallel questions of civilian life. The physician also profits from the rapid advances of Surgery in the last five years in almost every direction, and from the more exact knowledge that has been obtained through the specialization, in military hospitals, of certain forms of medical cases. Nowhere, however, has the army taught us more than in the field of psychiatry. One of the most urgent needs of the day in Canada is the establishment of proper psychopathic hospital wards for the care of insanity, especially in its incipient forms, in which the patients will be provided with the same up-to-date care and skilled nursing which is given to other forms of acute illness, with the minimum of restraint.

Such a psychopathic hospital with a capacity of 450 beds has been provided for military mental cases at Cobourg, and is now being most successfully operated. An extremely interesting outline of it is given in this issue in an article by Major E. H. Young. Among other points we learn from it that the patients have received an unusual amount of attention from medical experts, and that the social ostracism so often extended to those afflicted with psychoses has been avoided and the free mingling of the patients with the public has been encouraged. The returns to civil life already reported from the Cobourg Hospital in the twelve hundred cases received and cared for are most encouraging, and we look forward to even better results in the final figures.

WAX MODELS FOR THE NATIONAL WAR MUSEUM

THE necessity of keeping adequate records has been so frequently brought to the attention of the profession in recent years that new developments in this work should be welcomed. It is pleasing to note that the Government had the foresight to make a grant toward preserving the surgical records, in so far as plastic surgery is concerned, in such a substantial form as those models supply.

To those who are familiar with the models at the Army Medical Museum in Washington the value of such representations to show certain types of surgical conditions is only too well known. These are of especial interest at the present time as a means of comparing the results of the Civil War surgery with those of to-day. The nicely shaped stumps that were produced in the pre-antiseptic days, as evidenced by these models, show what good work was done under conditions which the modern surgeon would deem impossible.

No history of surgery can be complete without detailing the advances made in the different periods and the latter can be shown by drawings, photographs, *x*-ray plates, casts

and models. These different methods have all been used by the Canadian Army Medical Corps during the present war.

As this was the first big war in which facial surgery was given an opportunity to develop, it is important that a careful record should be made of it in all its phases. Probably no branch of surgery can show more advancement during the war than this. There was a wealth of material, which could be concentrated in one institution, such as can never occur in peace times. While advantage was not taken of this fact until the war was long under way, yet the very magnitude of the surgical work ultimately forced the authorities to establish special centres for the different types of injuries.

At the centres devoted to facial surgery, the surgeon, dentist, artist, and sculptor were collected to try and restore not only the functions destroyed by the ghastly wounds, but also to so bring back the appearance of the man to so near normal that he could re-enter the society he left on enlistment. This phase of the question is of great importance too from the economic standpoint, as a man, disfigured sufficiently to lessen his earning capacity, would always be a charge on the country according to pension regulations.

The authorities were fortunate in securing the services of Major Lessore to look after the work from the sculptor's point of view. He is an eminent British sculptor, who has an international reputation, and whose work is already familiar to many Canadians. These models of his will make a great addition to the War Museum both from a surgical and artistic standpoint.

THE RESOLUTIONS PASSED AT THE QUEBEC MEETING

THE usual number of resolutions were submitted to the annual meeting of the Association. It was a pleasure to commend the Government for at last establishing a De-

partment of Public Health. The members also went on record as being willing to assist the Government in the choice of the Deputy Minister. That the Government has since chosen wisely in this connection is obvious to all.

A committee was appointed to consider the whole question of medical research in Canada. Its members have a large undertaking ahead of them if they devise some adequate scheme for encouraging this work in Canada. The great problem would seem to be to provide the funds necessary for maintaining a body of workers in such a way that they will not have to build up a private practice.

The conclusion of the War called for a resolution commending the members of the profession for the good work they accomplished while in uniform. Suggestions for maintaining a permanent military medical organization were also made. These included the teaching of military subjects at the universities and the establishing of research fellowships by the Militia Department. This would seem to be the cheapest and at the same time the best method of training physicians for the duties they might be called on to perform in the event of another war.

The question of maintaining a permanent medical force for Canada should be carefully considered in the light of the experience gained during the present war. Raising the rates of pay to the scale in force in the R.A.M.C. will not be sufficient to attract the better class of medical men to undertake this work. Even if it did, they would soon deteriorate into inferior men after a few years of army life.

The splendid record made by militia medical officers in the senior positions would suggest the possibility of training the officers at the universities by means of post-graduate courses. They should be compelled, however, to maintain their efficiency as medical men by the struggle for existence in private practice.

ERRATA

THE Editors beg to call attention to two serious typographical errors which occurred in the editorial columns of recent issues of the JOURNAL.

In the July number in an editorial note (page 650) notice is taken of the very handsome donation of Sir John Eaton to the medical department of Toronto University, and associated with this notice our desire was to call attention to the appointment of Dr. Duncan Graham to the Chair of Clinical Medicine as a full-time professor. In the article as printed, the word "full-time" was unfortunately omitted and the sentence read "to the first professorship in Clinical Medicine." Our readers doubtless all noticed the mistake, for the Chair of Clinical Medicine at Toronto has been in existence since 1887, and has been ably filled, first, by the late Dr. J. E. Graham, and after his decease by Dr. Alexander McPhedran who only resigned last year. The JOURNAL, while apologizing for the error, again desires to congratulate Toronto University on the important advance in medical teaching in Canada of the full-time professorship in Clinical Medicine.

In the September number another error was made in a brief editorial on the Deputy Minister of Health, in which the name of Colonel John McCullough was unfortunately substituted for that of Colonel John A. Amyot by a mistake of the copyist.

We also desire to call attention to the important letter published in this issue from the Dean of the Faculty of Medicine, Queen's University.

The new Editorial Board, which with this number takes control, regrets extremely the occurrence of these misleading statements. The Acting Editor, Dr. Maude Abbott, who during the past four years has laboured enthusiastically in behalf of the JOURNAL, and, up to the present without any remuneration, lay seriously ill in the Royal Victoria Hospital.

Others who would have prevented such mistakes appearing were out of town. The new Editorial Committee will see to it that no such unfortunate statements occur again.

The new Federal Health Department has already taken over the Department of Quarantine, formerly administered by the Department of Agriculture, but more recently under the Department of Immigration. The new department has also taken over the medical branch of the immigration service; the administration of the Adulteration of Foods Act, and the Proprietary and Patent Medicines Acts formerly administered by the Department of Trade and Commerce. These changes include the transfer of the staffs of these departments to the Health Department.

Dr. Amyot, the deputy minister of health, is taking up with the health authorities of the province, plans for co-operative action in combatting venereal diseases, and matters affecting the health of the people generally. The minister has intimated that shortly the plans of the department will be sufficiently advanced to permit of a definite announcement as to its policy and proposed activities.

The increase in the consumption of opiates in Canada last year was so marked that the Government has considered it necessary to impose restrictions on such imports. They may now be brought in only by license.

In 1918 a total of 12,471 pounds of crude opium was imported, while in the fiscal year ended March 31st, of this year, it had jumped to the total of 34,263 pounds. Of powdered opium, 51 pounds was imported in 1918, and 123 in 1919. The value of the crude opium brought in in 1918 was $148,346, in the recent fiscal year it was $534,555.

Much the same situation obtains in regard to cocaine and morphine. A total of 4,705 ounces of cocaine was imported in 1918. In the last fiscal year it had jumped to

12,333 ounces. Of morphine the 1918 figures were 27,520 ounces, and this year, 30,087.

Under the regulations which it has been found expedient to adopt, the application must state the name of the importer, the intended destination, and the use to which it will be put. Officially, no cause is assigned for the marked increase in consumption. There are various theories. One of them is that people, unable to get liquor, may be turning to dope.

Correspondence

September 12th, 1919.

To the Editor:

Sir:—In the September number of the JOURNAL, under the heading "Medical Schools" the statement is made that the clinical work of Queen's Medical College will eventually be transferred to Ottawa.

You will please contradict this in the next number. The proposition has not even been formally discussed by the authorities at Queen's, so that the announcement is at least premature.

On behalf of the Faculty of Medicine, I also deny the second part of the statement that "the small population of Kingston makes the clinical supply inadequate". The hospitals of Kingston serve a large district of Eastern Ontario and are unable to receive all the patients applying for admission. Plans are far advanced for the rebuilding and enlargement of the General Hospital, and over one hundred thousand dollars of the money required in the bank.

As a matter of fact there has been for some time past adequate clinical material for the purposes of the Medical School: indeed there has been more material than could be used.

Yours etc.,

J. C. CONNELL, Dean.

The Editors regret very much that the item to which the above letter refers found insertion in the news columns of the JOURNAL.

The Association

RESOLUTIONS ADOPTED AT THE ANNUAL MEETING OF THE ASSOCIATION AT QUEBEC, JUNE, 1919

On Arrangements for Meeting of Executive Council Before Meeting Opens and the Early Presentation of all Resolutions

Resolved:

"That the Executive Council request that the Committee of Arrangements for next year be instructed to provide an opportunity for the first meeting of the Executive Council on the day before the meeting proper begins. It further recommends that all resolutions to be submitted at the meeting of the Association be typewritten in duplicate and in the hands of the Secretary in time for presentation at this first meeting of the Executive."

On the Selection of a Deputy Minister of Health

Resolved:

"That the Executive Council be instructed to communicate with the Government and express the willingness of the Canadian Medical Association to co-operate with the Government in the selection of the Deputy Minister of Health, if such co-operation be desired."

Resolution of Appreciation on the Establishment of a Federal Board of Health

Resolved:

"That the Canadian Medical Association at this, its fiftieth annual meeting, held June 25th to 27th in the city of Quebec, desires to place upon record its appreciation of the action of the Government in placing upon the Statute book a bill for the creation

of a Department of Public Health. The Association has for many years by resolution and by deputations endeavoured to impress upon the Dominion Government the desirability of such legislation."

On Medical Research

Resolved:

"That the Canadian Medical Association, being desirous of encouraging in every way possible the spirit of medical research in Canada, either by individuals or institutions, hereby appoint a Committee consisting of Drs. Vallée, Meakins, Mader, with the mover and seconder, to consider the whole question of medical research in this country, and to suggest after full inquiry the lines on which it may be best developed, and to report to this Association at its next annual meeting."

On Canadian Pensions

Resolved:

"That the Canadian Medical Association state to the Prime Minister its opinion (1) that Canadian Pensions Law should be administered with the utmost consideration for those whom it benefits; (2) that, unless they can be disproved, a pension claimant's statement of his condition is to be accepted; (3) but that no pension should be paid for disabilities which the best medical opinion asserts could be removed, if the applicant for pension would consent to receive reasonable treatment by simple and undangerous methods."

On the Organization of the Profession of the Dominion

Resolved:

"That the Executive Council be asked to appoint a special committee to assist in and to further a more complete organization of the profession of the Dominion, through the medium of the Provincial Associations, now constituted, and others, whose organization should be encouraged."

On Post Graduate Courses for Members of the Profession

Resolved:

"That the Committee on Medical Education be instructed to investigate the possibility of providing University Extension Post-Graduate Courses for members of the profession in various local societies, and to report on the question at the next meeting of the Association."

Re Canadian Army Medical Service

Resolved:

"That the Canadian Medical Association take this opportunity, the first after the cessation of hostilities, to record its deep appreciation of the sacrifice made by our profession in Canada during the long war which has just ceased. We are proud to think that no class in Canada has done more to show its patriotic and sound citizenship than the medical men. It is with deep feeling that we offer our sympathy to the relatives of those medical men who have so nobly given up their lives for their country, and to those who have sustained wounds and loss or deterioration of health as the result of war service. We feel that the medical officers, nursing sisters and the rank and file of the Canadian Army Medical Service by their patriotic and self-sacrificing devotion to duty have contributed in a large measure to the winning of the war, and have reflected great credit on Canada.

"It is evident that even though the war is now over, a permanent army medical organization must be maintained, and the following suggestions are offered in order that we may profit by the experience gained in this war.

"1. That a course be given in each Canadian Medical College on such subjects as medical history of the war, military sanitation, military medical organization, etc.

"2. That a research fellowship be established by the Militia Department in each medical college in Canada, for graduates who show special aptitude for such work, and that provision be made for their accommodation in the National Health Laboratory, which, we understand, is to be established in the Federal Department of Public Health.

"3. That the rate of pay of the medical men of the permanent

army medical service be put on a par with the R.A.M.C., in order to attract the better class of medical men to the Canadian Medical Service.

"4. That these and other suggestions for the improvement of the Canadian Army Medical Service be referred to a Committee constituted a follows: Presidents of the Canadian and Provincial Medical Associations; one member nominated by the Faculty of each medical college in Canada, and the following officers:

Brigadier-General A. E. Ross, C.B., C.M.G.....Kingston
Colonel C. Peters, D.S.O.....Montreal
Colonel J. D. Courtenay.....Ottawa
Lieutenant-Colonel F. H. Mewburn, O.B.E.....Calgary
Lieutenant-Colonel F. McTavish.....Vancouver
Lieutenant-Colonel S. W. Prowse.....Winnipeg
Lieutenant-Colonel Charles Hunter.....Winnipeg
Lieutenant-Colonel Clarence Starr.....Toronto
Lieutenant-Colonel J. Hayes, D.S.O.....Halifax
Lieutenant-Colonel Munroe.....Saskatoon
Major Harry Morell .....Quebec

and the mover and the seconder of the resolution; and that this Committee be given power to add to its numbers.

"A copy of this resolution and the report of the Committee be forwarded to the Prime Minister of Canada."

On Instruction on Nursing by Correspondence

Whereas, the Canadian Medical Association realizes the importance of the nursing profession to the public as well as to the medical profession, and believes that knowledge and skill are essential qualifications that can be attained only by training in some recognized nursing school in connection with a hospital, and only after a prolonged course;

Resolved:

"That this Association deprecates the education of nurses by the correspondence system and, further, would caution the public and the profession against the employment of nurses trained in this very incomplete and superficial manner."

On Infant Mortality and Campaign in Child Welfare

Resolved:

"That this Association recommend to the Minister of the Federal Department of Health the careful consideration of the important question of infant mortality, and the carrying on of an educational campaign in maternity and child welfare, so as best to serve the requirements of the several provinces of the Dominion."

The figures lately presented by Dr. Grimbert, Professor of the Ecole Supérieure de Pharmacie de Paris, to the Academie de Médécine are instructive. Following the ancient and laudable tradition of the Chair, he gives a table of the drugs supplied to the pharmacy of Hospitals from the year 1907 to 1917 inclusive. It is not absolutely complete because in a few cases he has been obliged to stop at 1914, the outbreak of the war having made the importation of certain foreign drugs difficult or impossible. The list records the new drugs in use at the present time, and also shows the old ones that are still retained. Among those used most frequently and in the greatest quantity appear rhubarb, senna, salts of soda and magnesia, bismuth, silver and antimony; the consumption of these has hardly varied during the last twenty years. Then come others equally well known, including different preparations of opium and quinine, cod-liver oil, sulphur and the iodide and bromide of potassium, but these are now supplied in half, or less than half their former quantity. Others, like cantharides, once much in use for blisters and other purposes, have pretty well ceased to be administered; while yet others, among which are caffeine and theobromine, have either recovered their former popularity or have been steadily mounting in favour. This is particularly the case with theobromine, the consumption of which in the Parisian hospitals has increased from 28 kilos in 1896 to 175 kilos in 1914. Among external remedies of this class, the different preparations of iodine are notable, as is mustard flour, the quantity of both having doubled during the sixteen years.

Canadian National War Museum

Description of a Series of Wax Models Made by Major Lessore for the Canadian Government at the Canadian Hospital at Orpington, Kent

THE collection of wax models comprises both facial and general surgery cases, though the majority of the latter are not considered quite suitable for wax models as all the information that these are intended to convey can be given by simpler means, such as a plaster cast, photograph, *x*-ray photograph or drawing.

In the case of facial injuries, however, certain elements that do not have to be considered in general surgery call for more perfect and elaborate illustration. In a facial defect there is not only the functional question to consider, but also and above all, the plastic question, or question of appearance, which necessitates the adoption of a means of expression which can adequately render the exact appearance of the human face. There are, therefore, not only the surface contours of the features and their relation to one another, but such elements as the transparency of the skin, the colour, texture and opacity of the wounds and scarred tissue, the differentiation between clean and hairy skin, and between normal skin and the surface left by a healed wound that have to be taken into account and reproduced, if one is to give an exact representation of the condition of a patient before and after his operation.

During the war there has been an opportunity such as never would occur in time of peace, for the study and development of plastic surgery in all its branches. In civil life there are not enough cases to keep a surgeon confined to this special class of work, whereas in war the surgeons were able to concentrate many cases of a similar kind in one hospital and pursue the study of the work together. This enabled them to rapidly judge which operations gave the best results and by concerted action obtain better results than could have been achieved by dealing with the problems in a piecemeal and haphazard way.

It may not be true to say that any remarkable discoveries or inventions have taken place, but on the other hand it can with justice be claimed that from small beginnings and tentative experi-

ments the most remarkable developments have taken place, developments that would greatly have surprised the surgeons of only a few months earlier. It is in order to accurately register these developments when they take place and record the methods by which they were obtained that the system of recording the results by wax models was introduced. In this way it is hoped that the information gained through the war may never be lost to succeeding generations of surgeons.

It is intended that the collection of wax models and other records of the work done by the Canadian Army Medical Corps shall be ultimately housed in a permanent exhibition in Ottawa, but in order to render them more accessible to the universities and medical institutions throughout the Dominion, it is proposed that duplicates will be made available for these institutions on their application and at their expense.

Colonel Armstrong of McGill University obtained the grant from the Canadian Government by means of which his project of establishing this elaborate system of records could be financed. On his recommendation, Major Lessore, the sculptor, was appointed to take charge of the work and a laboratory was established at Orpington, where the greater number of the Canadian facial cases was being treated at that time. Shortly afterwards the majority of the facial cases was concentrated at Queen's Hospital, Sidcup, which became a general centre for this work and included besides the Imperial and Canadian patients, those from the other Overseas Dominions. The laboratory, however, remained at Orpington, but its staff was made mobile and able to follow the work in all other hospitals.

The collection, as far as it is completed, will probably be ready for shipment to Canada during the summer, the unfinished models will not, however, be sent to Ottawa. It is proposed that they should be sent to Montreal, where the new facial hospital is being established, and where the laboratory will be transferred. A large number of the models was exhibited in London at the Royal College of Surgeons in 1918. The exhibition was opened by Sir Robert Borden, and being the most comprehensive of its kind, aroused much interest. Since their removal the models have been improved and the collection greatly increased by the addition of other interesting samples.

Report on Material Received for the Canadian National War Museum from the Royal College of Surgeons, London

A Report has been presented to the Director-General of Medical Services, Ottawa, by Captain Morton E. Hall, C.A.M.C., on the Museum material being received and mounted for the Canadian National War Museum in the Preparation Department of the Medical Museum of McGill University, which has been made the depot for the reception and preparation of this material pending further arrangements. The report embodies the following facts:

Arrival of Material from England.

Sixty-three boxes of museum material have been shipped from the Royal College of Surgeons, England, to Canada, consisting of wet pathological specimens, macerated bones and several cases of captured German medical war accessories as splints, drugs, bandages, etc.; these cases contained all material available in England for Canadian Medical Museum purposes. Thirty Canadian specimens, included in the National collection at the Royal College of Surgeons were retained by the Imperial authorities and an equal number substituted from the National collection.

Classification of Canadian Medical Museum Material.

The material may be divided roughly into three classes, viz: 1st. Macerated bones. 2nd. Wet specimens illustrating gun-shot wounds and action of poisonous gases on the tissues, and 3rd. Wet specimens illustrating ordinary clinical diseases that the Army Medical Officers were called upon to treat.

Disposition of Specimens

Macerated Bone Specimens.

The collection of macerated bones, approximately two hundred in number, is a very complete, valuable and instructive one, illustrating all varieties of gun-shot injuries and more particularly the associated processes of repair and infection. These specimens, in the years to come, must be of great value to the future Canadian war surgeon and more particularly will be of great value in the

teaching of clinical surgery and pathology. It is suggested that the whole collection should be assembled in the Museum Building at Ottawa, and be made available for teaching purposes by the several Medical Colleges of Canada, and that they be kept together as a unit.

Wet Specimens showing Gun-Shot Injuries, etc.

This second group comprises approximately three hundred specimens, of which two-thirds will be valuable for Museum mounts. In this group there are many duplicate specimens, particularly those showing the action of poisonous gases. Those that are not used for the Canadian War Museum should be used to furnish a series to each of the Medical Colleges in Canada.

Wet Specimens showing Ordinary Lesions.

This group is a representative one, illustrating the diseases, aside from wounds, which the Army Medical Officer was required to treat. It is suggested that the best of these be mounted largely for their historical value rather than for any value for teaching purposes.

At the present time, a large number of specimens are ready for mounting, but this has been delayed on account of shortage of museum jars. Approximately seventy-five wet specimens have been mounted.

Conclusion.

The collection when finally assembled at Ottawa will form an excellent nucleus for the future Canadian National Medical Museum. It is suggested that the wet specimens, which are of relatively little value for elementary teaching be loaned to Medical Conventions and Societies, and that the macerated bone collection be made available, wherever possible, for the teaching of Medical Science, every care being taken, however, to preserve specimens from injury in transit.

Obituary

DR. R. J. GIBSON

Dr. R. J. Gibson, the well-known physician and surgeon of Saulte St. Marie, died suddenly on the morning of August 6th. Death came as the result of heart failure. The deceased was widely known throughout the medical profession of Ontario, and was recognized as one of the foremost surgeons of the province. In 1913–14, he was president of the Ontario Medical Council. He was a graduate of McGill University, finishing his medical course in 1891, and afterwards spending a year in Edinburgh University. At the commencement of his professional career the late Dr. Gibson was associated with Dr. Gunn in Clinton, Ontario, afterwards taking the appointment with the C. P. R. for the Chapleau Division. He came to the Sault in 1894. He was identified in a marked degree with the public and social life of the city, more particularly the General Hospital, where he was the head surgeon and recognized as a most efficient physician. He was the chairman of the High School Board for the past two years, and devoted much time and energy to the educational interests of the community. He was also on the military board of medical examiners from 1906 to the end of November, 1918. Dr. Gibson leaves a widow and young son, his eldest son having predeceased him a year ago. He was a member of the Anglican Church, and in fraternal circles a member of the Masonic Order.

DR. J. D. R. WILLIAMS

One of the oldest medical practitioners of the united counties passed away recently in the person of J. D. R. Williams, M.D., of Ontario. He was in his eighty-seventh year.

For over forty years he practiced medicine in Cardinal, where he died at his residence in that town. During the historical times of the Confederation he took an active part in political life, reporting the proceedings of the first Provincial Parliament in Ontario. He took a great interest at all times in public affairs. The late Dr. Williams was twice married, and leaves a widow and nine children.

Miscellany

News

THE WESTERN PROVINCES

The quarterly meeting of the Central Council of the Canadian Red Cross was arranged to take place in Winnipeg on September 9th. The judgement of the London War Committee, composed of keen Canadian business men in England, has been of inestimable value in connection with the hospital-demobilization and, as a result, the Society has realized over £49,000 up to the end of June. In addition to the shipments made to Canada, the expenses attached to the packing and shipping is very great. The supplies will be distributed in all the provinces of the Dominion, and will be used to equip the district and municipal hospitals which the Canadian Red Cross Society hopes to assist the Government health bodies to open in different parts of the country.

At the recent convention of the Sanitary Inspectors' Association of Western Canada, E. W. J. Hague, assistant Chief Sanitary Inspector of Winnipeg, introduced the discussion of the housing scheme which now occupies the attention of the Dominion, provincial and local governments. He urged the health inspection of newly constructed houses before occupation, and quoted freely from sanitary reports in Great Britain, Canada and the United States. The American Government spent nearly $100,000,000 on housing during the War.

A vote of thanks was given Mr. Hague at the close of the meeting for the manner in which he had presented the subject.

The provincial laboratory of the University of Alberta is conducting a special course in public health nursing for registered nurses who are going to carry out school inspection and child welfare work. The provincial board of health has undertaken the arrangement of the course this year. Next year it will be conducted by the University of Alberta. Two months were to be devoted to lectures and demonstrations in child welfare work

school inspection, pre-natal care, care of the mentally defective and general health nursing work. The nurses are to be brought in later in the year to complete the course. A special welfare nurse from the public nursing training school at Seattle will give a special course in child welfare. Four nurses have already graduated in this work and have been assigned to different centres where they carry on baby welfare instructions week ends, and in the meantime make excursions through surrounding districts to the children in the different schools. This is the inception of the new health work under the department created this session with Hon. A. G. Mackay, minister of health and municipalities in charge.

The province is providing in addition, a special course in obstetrics for nurses who will agree to work in outlying districts. For this purpose an item of $30,000 has been passed in the health estimates. While no provision has yet been made for it, Mr. McKay hopes that ultimately a plan will be worked out to provide persons to look temporarily after settlers' homes in outlying districts, when the mother is sent to a maternity hospital.

It is expected that by the first of September the demand for public health nurses will be far in excess of the number who have taken the special course at the university. A suggestion by the minister of health is being readily accepted, namely, that the question of school inspection by public health nurses should be linked up with the district hospital scheme, and the ratepayers allowed to vote on the same. This plan would much simplify and cheapen the whole work of inspection.

The Western Canadian Sanitary Inspectors' Association opened its eight annual convention in Saskatoon on August 1st. The meeting was marked by the presence of civic officials, delegates from Ontario, Manitoba, Saskatchewan, and Alberta, and experts upon subjects incident to sanitary improvement. The convention was formally opened by President Arthur Kingley, of Winnipeg, who gave a brief outline of the progress made by the Association since its inception in Regina in April, 1912. At that time a temporary constitution was drafted and officers chosen. The membership of the society now numbers sixty-three, but at one time numbered eighty-four. At the outbreak of the War, twenty-two members enlisted in the army, five of the number making the supreme sacrifice.

Mr. Kingley urged upon each of the members of the association to bring pressure to bear upon their legislators the necessity of

legislation which would be conducive of good sanitation. He believed the Federal Minister of Health should be a cabinet minister, for such an official would assist in the curtailment of communicable diseases throughout the Dominion. Dr. Arthur Wilson, Medical Health Officer, Saskatoon, urged better co-operation between the health officials and ratepayers, which would, he affirmed, rebound to better conditions in every city and town. He urged that the local health officers get in closer touch with inhabitants of towns or cities in order that the public in general may be better educated in measures which will prevent communicable diseases. The convention lasted two days.

A WARNING to the people of Saskatchewan has been issued to effect safeguards against typhoid fever, in view of the fact that a number of cases of the disease is being reported from various parts of the province.

DR. M. M. SEYMOUR, Commissioner of Public Health, announces that a number of typhoid carriers are coming into the province at the present time, and it is essential that people should protect themselves by means of vaccination. The department is distributing vaccine free to physicians. Its use has eliminated typhoid from the armed forces of Europe, and America, and civilians should adopt the same measures to protect themselves. The department sent out a number of inspectors to see that railway and other construction gangs were vaccinated.

THE nineteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held at the Chateau Laurier, Ottawa, on Thursday, October the 9th. The address of the evening will be delivered by Dr. John B. Hawes, of Boston, and a good programme is promised for the day sessions. This is open to the public.

ARMY MEDICAL SERVICES

IN the latest French Honour list the Croix de Guerre was awarded to Major Burnet E. Kelly, M.D., C.A.M.C.

THE Croix de Guerre has been awarded to John Kennedy, David Levesque, Stanley H. Hiskiman, Medicals, all of the C. A.M.C.

Dr. F. N. G. Starr, of Toronto, has received the decoration of Commander of the Order of the British Empire.

Major D. A. Clark, M.D., after five years of continuous service overseas, has been appointed to the staff of the Military Neurological Hospital at Vancouver.

Colonel W. B. Hendry, D.S.O., has been appointed associate professor of obstetrics and gynæcology in the University of Toronto.

The Indian Government has offered a grant of $2,000 towards the erection of a hospital as a memorial to the soldiers of India who laid down their lives in large numbers for the Empire in the late war. Canada has been challenged to raise $3,000. The Canadian Auxiliary, which supports the Canadian hospital at Nasik, near Bombay, has cabled to the Home Office accepting the challenge.

The League of Red Cross Societies just organized embraces representatives of Great Britain, France, the United States, Italy and Japan, who met at Cannes, France, in April. The Canadian Red Cross Society was at once invited to become a member of the League, irrespective of its affiliation with the British Red Cross Society. One provision for membership is that the Government of the country shall recognize the objects of its national Red Cross organization, and in the case of the Canadian Society, on the very day news of the League and its objects were cabled abroad, the Central Council, at its quarterly meeting in Toronto, changed the wording of its proposed amendment to its charter to comply with the wording of Article 25 of the Covenant of the League of Nations. The passing of the bill by Parliament, which made this amendment law, placed the Canadian Society on equal footing with the various national organizations comprising the League.

As the situation now stands, the Canadian Red Cross Society "may also carry on activities in time of peace or war for the improvement of health, the prevention of disease and the mitigation of suffering throughout the world" within its own Dominion, and as an accredited member of the League of Red Cross Societies must bear its share of responsibility in the same world-wide purpose. An opportunity for proving the usefulness of such an international organization was demonstrated almost immediately in the typhus

epidemic in eastern Europe. In the suppression of this disease the International Red Cross is uniting with the Supreme Economic Council.

Appointments:

Captain, Acting-Major John Cotton Maynard, is posted for duty under the A.D.M.S., military district No. 2.

Colonel Arthur Evans Snell, C.M.G., D.S.O., military district No. 3, is posted for duty temporary in the directorate of the D.G. M.S., Militia Headquarters, Ottawa, July 24th, 1919.

Captain Lewis Mark Morton is posted for duty under the A.D.M.S., military district No. 6.

Captain Charles Vincent Scott is posted for duty under the A.D.M.S., military district No. 2.

Captain George Frederick Sykes, is posted for duty under the A.D.M.S., military district No. 1.

Colonel John George Adami, is posted for duty in the directorate of the D.G.M.S., Militia Headquarters, Ottawa, June 28th, 1919.

Major Thomas Lyon is posted for duty under the A.D.M.S., military district No. 11.

Captain James Garfield Munro is posted for duty under the A.D.M.S., military district No. 1.

Captain Milton Arthur Aittick is posted for duty under the A.D.M.S., military district No. 1.

Captain Richard Harvey Angrove is posted for duty under the A.D.M.S., military district No. 3.

Lieutenant-Colonel Archibald Lorne Campbell Gilday is posted for duty under the A.D.M.S., military district No. 4.

Major Allan Martindale Yates is posted for duty under the A.D.M.S., military district No. 1.

Quartermaster and Honorary Captain James Brown McKay is posted for duty under the D.G.M.S., Headquarters, Ottawa, July 23rd, 1919.

Book Reviews

A Text-Book of Practical Therapeutics. With especial reference to the application of remedial measures to disease and their employment upon a rational basis. By Hobart Amory Hare, M.D., B.Sc., professor of therapeutics, Materia Medica, and diagnosis in the Jefferson Medical College of Philadelphia. Seventh edition, 1,023 pages, enlarged, thoroughly revised, and largely re-written; illustrated with 145 engravings and 6 plates. Price $5.50. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

"The object of this book is to place the subject of treatment before the reader so that it may be applied at the bedside in a rational manner." With this sentence the book opens, and it may be remarked at once that that object is completely attained. This is an eminently practical work. The following sections with which this treatise deals will show how comprehensive it is:

General therapeutical considerations, drugs, remedial measures other than drugs, feeding the sick, treatment of diseases, index of drugs and remedial measures, index of diseases and remedies.

We cannot see that such diagrams as those on pages 100 and 110 teach anything; if reflex action is understood they are superfluous, if not understood, they are not nearly sufficient.

The excellent discussion on the therapeutic use of alcohol should have been in a section by itself rather than merged in that on typhoid fever. Much more should have been said on kataphoresis and sciatica. The statement that, "the local treatment of sciatica is quite various," we understand, but it is not English.

Essentials of Surgery. A Text-book of Surgery. For Student and Graduate Nurses and for those interested in the Care of the Sick. By Archibald Leete McDonald, M.D., The Johns Hopkins University. 265 pages with illustrations. Price $2.00. Publishers; J. B. Lippincott Company, Philadelphia, London and Montreal, 1919.

This is an interesting elementary treatise not so much on surgery itself as on the anatomical, physiological and bacteriological

principles to be mastered before any surgery could be accomplished. It is rather a series of talks about surgery than a text-book of surgery. There is no tendency to avoid technical terms so that the glossary supplied is quite necessary.

The diagram on page 102 of the great lymph-spaces in and around the central nervous system is quite instructive; but the diagram of the spinal cord on page 111 is poor.

It is most misleading to call the spinal cord a part of the peripheral nervous system as is done on page 98.

What is to be understood by "Rolando projection" as applied to the cerebral cortex (page 99), and "who is Sylvia" (page 99)?

THE JOHNS HOPKINS HOSPITAL REPORTS. VOLUME XVIII, FASCICULUS II. Annual Report of the Department of Pathology of the John Hopkins University and Hospital. Price $3.50. Publishers: The Johns Hopkins Press, Baltimore, 1917.

Of the twenty-seven papers in this volume, no less than eleven are physiological. Some of these latter are representative of work on such modern problems as the inter-relation of the surviving heart and pancreas of the dog in sugar metabolism; the mechanism of absorption from the colon; fat in cardiac and other muscles; and the metabolism of cells in vitro.

In all the researches, physiological and pathological, the literature cited is very full, and the illustrations throughout the volume can only be described as magnificent.

The expression, "gross specimen", is an objectionable ellipsis for, "naked eye appearance of the specimen".

MILITARY SURGERY OF THE EAR, NOSE, AND THROAT. By HANAU W. LOEB, M.D., Major, Medical Reserve Corps, U.S.A. Price $1.25. Publishers: Lea & Febiger, Philadelphia and New York, 1918.

This is a very valuable manual on account of the large amount of clinical material it deals with, afforded by experience in the late war. It has all the evidences of knowledge acquired at first hand; it is by an expert for experts.

D. FRASER HARRIS

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A Manual of Exercises for the Correction of Speech Disorders. By May Kirk Scripture, B.A., instructor in speech, Columbia University, and Eugene Jackson, B.A. 236 pages, illustrated. Price, $2.00 net. Publishers: F. A. Davis Company, Philadelphia, 1919.

Roentgen Interpretation: A Manual for Students and Practitioners. By George W. Holmes, M.D., roentgenologist to the Massachusetts General Hospital, and Howard E. Ruggles, M.D., roentgenologist to the University of California Hospital. 211 pages. Illustrated with 181 engravings. Price, $2.75. Publishers: Lea & Febiger, 706 Sansom St., Philadelphia, 1919.

Applied Anatomy and Kinesiology. By Wilbur Pardon Bowen, M.D., professor of physical education, Michigan State Normal College, Ypsilanti. Second edition, thoroughly revised. 334 pages. Illustrated with 197 engravings. Price, $3.50. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

Gynoplastic Technology. With a chapter on Sacral Anæsthesia. By Arnold Sturmdorf, M.D., clinical professor of gynæcology, New York Polyclinic Medical School. 334 pages, illustrated. Price, $5.00 net. Publishers: F. A. Davis Company, Philadelphia, 1919.

The Principles of Nursing. By Charlotte A. Brown, R.N., superintendent of nurses in the New England Hospital for Women and Children. 261 pages. Illustrated. Price, $1.75. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

The Canadian Medical Association

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THE SIGNIFICANCE OF A SMALL AMOUNT OF SUGAR IN THE URINE

By Louis Hamman, M.D.

Baltimore

EVERY physician who makes it a practice to examine the urine of his patients will find frequently, and often quite unexpectedly, a small amount of sugar in the urine. At once he is confronted by the question, what is the meaning of this discovery? Has the patient a mild diabetes? The answer is of more than academic interest, for upon the proper answer depends the comfort and welfare of the patient. If this symptom is an interesting but innocent abnormality, then it is an injustice to force the patient to undergo the inconvenience of a rigid diet. If the patient truly has a mild diabetes, then it is unpardonable neglect to allow him to continue unguided and unwarned. If the symptom is no innocent abnormality, and yet the patient has not diabetes, then it is important to push the investigation further in the effort to discover the underlying fault. These three possibilities actually exist and the discrimination between them is often difficult. However, before pointing out the way to separate them, I wish to speak briefly of two preliminary considerations.

These considerations relate to methods of collecting the urine and methods to determine that the reducing substance is definitely glucose. Nearly all mild glycosurias are postprandial glycosurias. In the early morning after the night fast the blood sugar is at a low level; after each meal it mounts somewhat to fall again after two or three hours. The degree to which it mounts depends upon the quantity of food that is taken, particularly upon the quantity of carbohydrates. Therefore the best time to test for sugar in the urine is from two to three hours after the largest meal of the day

and, as it is customary in this country to take the chief meal in the evening, the specimen of urine most likely to show sugar is passed before retiring. I find that as a rule physicians request patients to bring a specimen of urine without adding further directions, and, in response to this request, patients almost always bring a specimen of the morning voiding. This is perhaps the least desirable specimen they could choose. I have seen mild diabetes overlooked for many months in spite of repeated urine examinations because the specimens examined were always passed upon rising. On the other hand, not a year goes by without my discovering at least four or five instances where sugar is present in the evening specimen, but absent in the morning specimen. I regard it as highly important therefore that every physician should, as a routine, direct patients to bring two separate specimens of urine, one from the night voiding and one from the morning voiding. They should, in addition, caution the patient not to urinate after the evening meal until the time for collecting the specimen arrives. Under these circumstances, sugar in the evening specimen and none in the morning, indicates a mild or slight glycosuria, sugar in both a more severe glycosuria. In addition to its importance in facilitating the discovery of mild glycosuria, the practice of examining evening and morning specimens has further advantages. A little albumen and a few casts are often found in the evening specimen when they are absent in the morning, and if evidence of nephritis be discovered, a comparison of the specific gravity of the two specimens will often give a valuable insight into renal function.

Since physicians regularly use alkaline copper solutions to test for the presence of glucose, it is important, when reduction occurs, to determine definitely that the reducing substance is glucose. There is never any doubt on this score when the reduction is well marked, but slight reduction, and particularly atypical reduction, may be due to a number of substances other than glucose. If the physician has any doubt about the nature of the reducing substance, he should use the fermentation test. The test must be used with proper care, but it is very simple, easily performed and direct in its information. Only exceptionally will more elaborate tests be required.

Assuming it to be established that the patient has glucose in the urine, how is the physician to proceed to determine the significance of this symptom?

Sugar occurs in the urine when (1) the blood sugar exceeds a certain high level, or when (2) the renal permeability for glucose is

increased. In normal persons the fasting blood sugar is usually below 0·1 per cent. and even after meals rich in carbohydrate it seldom exceeds 0·14 per cent. Careful studies of the renal threshold for glucose have demonstrated that ordinarily no sugar appears in the urine until the concentration of sugar in the blood exceeds 0.17 per cent. This threshold, as it is named, is not uniform in different persons, nor yet in the same person at all times; it is, however, a reasonably constant factor. Patients, therefore, who excrete sugar only when the sugar in the blood exceeds 0·17 per cent. are said to have a hyperglycæmic glycosuria; whereas patients who excrete sugar although the blood sugar remains considerably below 0·17 per cent, are said to have a renal glycosuria. The distinction between hyperglycæmic and renal glycosuria has a very important practical implication as I shall point out.

It is impossible to distinguish with certainty between hyperglycæmic and renal glycosuria without studying the blood sugar. Methods for estimating blood sugar are now so simple and so accurate that while not every physician need make these estimations himself, still he should have no difficulty in finding an associate interested in these studies ready to make them for him. A comparison of the fasting blood sugar and of the blood sugar following a meal rich in carbohydrate taken at a time when sugar is being excreted in the urine, will usually make the distinction at once. However, there are possibilities of error. The blood sugar concentration varies with remarkable rapidity, and one can never be sure that the result obtained from a single specimen represents the highest level. If the blood sugar happens to be high it means, of course, that the patient has hyperglycæmia, but if the blood sugar happens to be low, it is not justified to conclude that the kidneys are hyperpermeable. When glycosuria is once established, glucose will continue to flow off in the urine after the blood sugar has fallen to a level far below the point at which glycosuria began. Therefore, even though the blood sugar is low, while sugar is being excreted, this does not necessarily imply that the patient has a low renal threshold for sugar. To overcome these difficulties, a test has been devised that is simple to carry out and gives the required information. The test is carried out as follows:

The blood sugar is taken in the morning after the night fast and the urine examined. Immediately thereafter 100 grams of glucose are administered in a lemonade and one-half hour, one hour, and two hours thereafter, the blood sugar is determined and the urine examined for sugar.

Normal persons react to this test with a rapid rise in the blood sugar which seldom exceeds 0·14 per cent. The high point is usually reached at the end of one-half hour and the original fasting level after an hour or an hour and a half. No sugar appears in the urine.

Patients with a lowered carbohydrate tolerance react with a much higher rise of the blood sugar and the elevation persists much longer. The blood sugar goes to 0·18 per cent. or much higher, and three, four or more hours elapse before it reaches the original fasting level. When the blood sugar exceeds 0·17 per cent., sugar makes its appearance in the urine and continues to be excreted while the blood sugar is above this level, and even for some time after it has fallen below this level.

In some normal persons, and in patients with increased carbohydrate tolerance, there is only an insignificant rise of the blood sugar and no sugar appears in the urine.

Occasionally very interesting variations from these typical reactions are observed. For instance, an apparently healthy person will show a normal blood sugar response, but unexpectedly sugar will be found in the urine. Such an individual utilizes sugar in a perfectly normal way, but the kidneys are hyperpermeable to glucose. I have had the opportunity to follow two such patients for longer than a year. One occasionally showed sugar in the urine after a hearty meal, the other never had glycosuria excepting after the 100 gram glucose tolerance test. In both, the condition was transient, for when tested a year later, the blood sugar rose to 0·16 per cent. and no sugar appeared in the urine. A number of patients who were sent for investigation because sugar had occasionally been found in the urine, responded to the test in the same manner, that is, the blood sugar rose but little and for only a short time, but sugar appeared in the urine. Another patient with marked glycosuria showed only an insignificant rise of the blood sugar after 100 grams of glucose, although abundant sugar was poured out in the urine. With a fasting blood sugar of 0·08 per cent. sugar was being excreted in the urine at the rate of 0·5 grams per hour; the blood sugar rose to 0·12 per cent. and the urine sugar to 2·6 grams per hour.

The last mentioned patient was a typical instance of renal diabetes. The others had the same condition in a mild degree. These mild cases of renal diabetes are characterized by slight and often only transient glycosuria. It is important to recognize the condition, because, in contrast to mild diabetes, there is no disturbance of carbohydrate metabolism and no tendency to gradual progression.

The condition is an interesting but benign disorder. While it may be advisable to restrict carbohydrates moderately, a rigid diet is unnecessary, and the prognosis is excellent. Patterson has well described the condition as diabetes innocens.

In contrast to patients with a mild renal diabetes, stand those patients showing a postprandial glycosuria who respond to the glucose tolerance test, not only by excreting sugar in the urine, but by displaying as well the typical curve of low glucose tolerance. As a rule, sugar appears in the urine only when the blood sugar exceeds 0·17 per cent., but at times glycosuria occurs, although the blood sugar does not exceed 0·14 per cent., and at other times no glycosuria occurs, although the blood sugar may exceed 0·2 per cent. In my experience a low renal threshold is found in diabetes only when the disease is moderately or quite severe. I have never encountered it in patients with only a small amount of sugar in the urine. However, even severe cases of diabetes with a low renal threshold may be contrasted with cases of renal diabetes by the characteristically protracted blood sugar reaction to the glucose tolerance test. A high renal threshold in diabetes, that is, a failure of glucose to appear in the urine when the blood sugar reaches or exceeds 0·2 per cent., occurs only when a renal lesion exists in conjunction with diabetes, or in late stages of the disease. This anomaly is very interesting but it has no relation to the phase of the subject we are at present discussing.

The glucose tolerance test, therefore, is a ready means to distinguish between renal and hyperglycæmic glycosurias, when only a small amount of sugar is present in the urine. The character of the blood sugar response and the renal threshold, are the deciding features. If the slight glycosuria be due to increased renal permeability, the condition may be dismissed as of little practical consequence. If, on the other hand, a definite metabolic abnormality is discovered, then further study must decide whether the glycosuria indicates a mild diabetes, or is a symptom of some other disorder. There are a number of conditions besides diabetes in which a small amount of sugar in the urine, particularly occasional glycosuria, is observed. Chief amongst these are disturbances of thyroid and hypophyseal function, hypertension, nephritis and diseases of the brain. These conditions are all characterized by a hyperglycæmic glycosuria, and as far as one can judge from the glucose tolerance test, the metabolic disturbance in all of them is the same. If the amount of sugar in the urine is fairly large and constantly present, it is strong presumptive evidence in favour of diabetes. However, a

definite distinction between these conditions can only be made by a careful clinical survey.

That the thyroid plays an important rôle in carbohydrate metabolism has long been known. Not infrequently patients with Graves' disease have a little sugar in the urine. In states of hypothyroidism, particularly in outspoken myxedema, there is a marked increase in sugar tolerance, a feature often of value in the diagnosis of doubtful cases. I have never seen glycosuria associated with hyperthyroidism when the disturbance of thyroid function was not well enough marked to be plainly discernible. Therefore if this possibility be held in mind, no confusion need ever arise.

The hypophysis exercises a control over carbohydrate metabolism similar to the influence of the thyroid. Indeed, clinically more marked grades of glycosuria occur with over-activity of the hypophysis than with hyperthyroidism. The frequent association of a mild diabetes with acromegaly is well known. I have seen a number of patients treated over a period of months for diabetes in whom obvious features of hypophyseal disease have been overlooked. If the physician is aware of this common association and directs his attention to a careful scrutiny of the patient for evidence of disease of the hypophysis this error will rarely occur.

Glycosuria occasionally occurs in disease of the brain aside from hypophyseal disorders. It occurs after trauma to the skull, after cerebral hæmorrhage, after convulsions, and in conditions associated with increased intracranial pressure. In all of these conditions the glycosuria depends upon stimulation of the hypophysis, and the mechanism is the same as in primary disease of the hypophysis. It is altogether unlikely that these conditions would escape clinical investigation and that the associated glycosuria would be mistaken for diabetes.

In acute nephritis slight glycosuria occasionally occurs as a manifestation of impaired renal function with a lowered renal threshold for glucose. In essential hypertension, and in chronic nephritis with hypertension, a little sugar is frequently found in the urine. In these cases the glycosuria represents an altered metabolism for the glucose tolerance test shows a high and prolonged blood sugar curve. In late stages of diabetes mild grades of nephritis and hypertension frequently occur. How then shall the two conditions be distinguished? The clinical pictures here become confused and I feel that the question can be approached only from a practical standpoint. If with hypertension and chronic nephritis there is but an occasional trace of sugar in the urine and

the blood sugar is not unduly high, then the disordered carbohydrate metabolism must be subordinated to the renal or vascular condition. If there is marked glycosuria and the blood sugar is unusually high, then the diabetes must be emphasized. The clinical history is of importance. Patients past middle life with mild diabetes often gradually develop nephritis and hypertension, so that finally the renal and vascular conditions assume the prominent position in the clinical picture. On the other hand, I have observed patients with hypertension over a number of years and have seen them gradually develop glycosuria and finally a definite intolerance for carbohydrates.

From the foregoing observations it is clear that it is not always easy to make a diagnosis of diabetes, if but a small amount of sugar is found in the urine of a patient taking an ordinary diet. While the plan of study I have outlined is necessary for a proper understanding of the situation, still I wish to emphasize that whenever doubt exists as to the true nature of the condition, the patients should be treated as diabetics. In this way some patient may be put to unnecessary inconvenience, but none will be harmed, whereas to overlook and neglect a slight diabetes will surely be followed by injury to the patient. I need scarcely dwell upon the importance of treating diabetes thoroughly and conscientiously when it is discovered in the early stage of an insidious onset. Many patients are not fortunate enough to have the disease come on in this insidious way, for unluckily too often does it begin with more abrupt and stormy symptoms. There is the best of clinical and experimental evidence to demonstrate that proper treatment instituted at an early period of the disease may prolong life indefinitely and ward off many of the distressing complications of the disease. It is my experience that physicians often neglect treatment at this stage when careful treatment is so richly rewarded, and reserve their serious therapeutic efforts until those grave symptoms arrive which by earlier care and attention might have been indefinitely postponed or entirely avoided.

THE AFTER-EFFECTS OF CHLORINE GAS POISONING*

By Lieutenant-Colonel J. C. Meakins, C.A.M.C.

and

Captain J. G. Priestley, M.C., R.A.M.C.

IT is now over four years since the enemy first used chlorine gas as an offensive measure of warfare. Whatever the immediate effects may have been, it has seemed of importance to determine what the eventual effect might be on the health of the soldier. The first chlorine gas attack was in April, 1915, in the Ypres salient, where the First Canadian Division was holding part of the line. This division suffered severely, and many of their casualties were due to gas poisoning. As they were unprotected with respirators or any other means of defence against this type of warfare, a maximum effect was obtained. This was both of a physical and mental character. The unusual and uncanny appearance of this first drift gas made a great impression on the soldiers' minds. This was further accentuated by the distress and agony produced in those who were severely gassed. Therefore, it has been difficult, some months later, to determine with accuracy from the history of the individual whether he had been exposed to the gas in sufficient concentration to produce symptoms or not. It is unwise to accept, without more evidence than the soldier's own statement, the fact, that every one who states he was gassed in this attack, really was.

In order to obviate this difficulty, the cases, upon which this report is based, were collected in the following manner. The admission and discharge books, of the field ambulances operating behind the area occupied by the 1st Canadian Division in the latter part of April and first part of May, 1915, were examined for cases of gas-poisoning, and seven hundred consecutive cases have been followed through all the records obtainable. Of these, two hundred

*From the Medical Laboratory, 15 Canadian General (Duchess of Connaught Red Cross) Hospital, Taplow, Bucks.

Read before the Canadian Medical Association, Quebec, June 25th, 1919.

and twenty-two (31·7 per cent.) do not have any further mention of gas-poisoning made in their records. It is therefore presumed that the majority of these cases were returned to duty without further medical treatment than that received at the field ambulance. The remaining four hundred and seventy-eight were evacuated to the base, where they were under treatment for varying periods. Of these one hundred and forty-six (20·8 per cent.) were treated to a finality at the base hospitals. There were six deaths and the others returned to duty. No further evidence is found in their records of their having suffered from the effects of the gas poisoning. The remainder, three hundred and thirty-two (or 47·4 per cent.) were evacuated to the United Kingdom for further treatment.

It is with the last group of cases that the present investigation is concerned particularly. They were presumably soldiers who had suffered considerably from the effects of gas, and it would be in such cases that the most pronounced after-effects might be looked for.

In these three hundred and thirty-two cases careful records have been sought in regard to their further symptoms and movements. They were disposed of in three main directions: (1) Returned to France. (2) Retained in England. (3) Invalided to Canada. In so far as the symptoms and signs as observed in the United Kingdom are concerned, we will take them up under these main divisions.

I. Returned to France. Eighty (24·1 per cent.).

(*a*) Full duty—seventy-two.

(1) Average time in hospital—nine weeks.

(2) Average time home service—ten months.

(3) Principal symptoms while in hospital—

Irritable heart (neurasthenia)	36
Bronchitis	6
Gastric symptoms	4
No definite symptoms	26
	72

(*b*) Base duty—eight.

(1) Average time in hospital—fourteen weeks.

(2) Average time home service—fifteen months.

(3) Principal symptoms while in hospital—

Irritable heart	4
Bronchitis	4

Of these cases, eight were subsequently killed in action; six were severely wounded; and eight were reduced in category on account of shell-shock, or nervousness. The case reports of a number of these cases gave distinct indications that they were suffering from a very severe condition. But in spite of this the average duration of their stay in hospital was not conspicuously long, nor was the period they spent in home service

II. Retained in United Kingdom—Forty-eight (14·4 per cent.). Subsequently classified as follows:

(*a*) Class A—Eight cases.

(1) Average time in hospital—eleven weeks.

(2) Average time on home service—thirty months.

(3) Principal symptoms while in hospital—

Irritable heart	4
Nil	4

(*b*) Class B—Forty cases.

(1) Average time in hospital—fourteen weeks.

(2) Average time on home service—thirty-three months.

(3) Principal symptoms while in hospital—

Irritable heart	30
Bronchitis	7
Other conditions (hernia, gun-shot wounds, eye-sight)	3

The histories, obtained in regard to these men, indicated very strongly that they were inherently of a much poorer calibre, both physically and nervously, than were those who returned to France. There was no evidence that their symptoms, while in hospital, were of a severer type, although the average period of stay in hospital was much longer than in the case of those who returned to full duty in France (as fourteen is to nine). However, those cases which were sent to France on base duty showed a stay in hospital of a similar duration to those retained in England, namely, fourteen weeks.

III. Invalided to Canada—Two hundred and four (61·4 per cent.).

(1) Average time in hospital—seventeen weeks.

(2) Average time on home service—five and a half months.

(3) Principal symptoms necessitation invaliding to Canada:—

Irritable heart	118
Bronchitis and pneumonia	30
Hæmoptysis	4
Asthma	22
Neuroses	20
Indefinite	30
	204

Of the thirty cases who were suffering from indefinite symptoms of gassing, sixteen were invalided to Canada for conditions other than gas poisoning.

The physical condition, four years after exposure to chlorine, in the one hundred and eighty-eight cases invalided to Canada, was as follows—

No appreciable disease	54
Irritable heart	78
Neuroses	18
Bronchitis, etc.	18
Asthma	8
Unable to trace	14
	188

Deaths. In this series of cases there were five deaths. This, of course, does not indicate the mortality from chlorine poisoning, as all of these deaths occurred after the cases had arrived at the base—four in France and one in United Kingdom. Three of the cases that died in France were in hospital but a few days. Death was apparently due to the acute pneumonic condition consequent on such a powerful irritant. The other case died comparatively suddenly, five months after exposure to the gas. No record was obtainable as to the physical examination, or the exact cause of death. The symptoms recorded were pain in the left chest, dyspnœa, orthopnœa and pronounced cyanosis.

In the case dying in the United Kingdom, death occurred with equal suddenness eleven months after the date of gassing. The notes were as follows:—"Found dead in bed. Death was due to heart failure, the result of chronic bronchitis and pulmonary congestion, the result of gas poisoning." This man was a rather elderly soldier who had not been very severely affected by the gas, as his

stay in hospital amounted to only eighteen days. The evidence at hand is not conclusive that death was necessarily the result of gas poisoning.

Of the cases invalided to Canada there is no record as yet of any having died.

Symptoms.—(1) Irritable heart. Symptoms of this syndrome are by far the most common of all the after-effects of chlorine poisoning. The severity of this condition varies considerably. Certain of the cases are evidently very much disabled, while others have a comparatively slight disability. The evidence is clear that a slow but conspicuous improvement occurs in these cases as a considerable number of them are free of symptoms after four years. It is to be hoped, that with firm but sympathetic handling, these cases will recover eventually. The most pronounced symptoms in these cases is the shortness of breath, especially on exertion. This is more conspicuous than in those who complain of the symptoms of "irritable heart", which have followed the various infectious processes.

(2) Bronchitis. The comparatively few cases which exhibit signs of bronchities is most striking. In consideration of the nature of the initial lesion it was to be expected that a considerable number of cases of chronic bronchitis would result. Further, it would seem probable that such cases would be of a more or less progressive nature. This, however, is found not to be the case. Many of those who had signs of bronchitis while in the United Kingdom reveal no evidence of a pulmonary lesion three years later. On the other hand a certain number of cases in whom there were no appreciable signs in the lungs, when they left the hospital in the United Kingdom, are now suffering from various forms of chronic pulmonary disturbance. (See table.)

A COMPARISON OF CERTAIN CASES SHOWING PULMONARY SIGNS IN UNITED KINGDOM OR IN CANADA

No.	Pulmonary Signs in United Kingdom	No.	Pulmonary Signs in Canada
57	Lungs normal.	57	Asthma functional secondary to gassing.
125	Emaciation—lungs nil.	124	Signs of bronchitis.
268	Asthma—recurrence from civil life.	268	Asthma continues.
67	Rales and hæmoptysis.	67	No record.
68	Hæmoptysis—lungs nil.	68	Recovered completely.
118	Condition poor, moist rales.	118	Perfectly well.
174	Many rales—purulent sputum—laryngitis.	174	Laryngitis persists—lungs normal.
240	Right apex dull—no Tuberculosis	240	Chronic cough—asthma.
286	Lungs nil.	286	Emphysema—many piping rales.
287	Bronchitis.	287	Lungs nil.
299	No pulmonary signs—cough.	299	Rt. apex expansion diminished—rales left base—sputum copious. Temperature 99° at 4 p.m.
319	No pulmonary signs.	319	Many fine rales in both lungs—expansion poor—apices dull. Morning cough.
322	Bronchitis—copious expectoration.	322	Asthmatic attacks.
325	Bronchitis.	325	Emphysema, cyanosis, no rales.
305	Bronchitis.	305	Lungs—nil.
337	No physical signs.	337	Emaciated—Lungs show fibroid condition.
343	No physical signs.	343	Expansion poor—rales over upper right chest.
344	Bronchitis.	344	Lungs nil.
345	No physical signs.	345	Expansion poor—prolonged expiration—rales at right apex—night sweats.

In 1918, Achard and Flaudin, in their report on the sequelæ of poisoning by suffocating gases, drew attention to the occurrence of certain cases which they called pseudo-tuberculosis. These cases occurred particularly after chlorine poisoning. They were characterized by a prolonged course, with low fever, profuse expectoration, loss of weight and pulmonary symptoms suggestive of a tuberculous lesion. The sputum at no time, however, showed tubercle bacilli, the albumen reaction of the sputum was not positive, and the *x*-ray examination was not indicative of tuberculosis. A number of cases similar to those described by them have been found in the present series. Continued observation of these cases will be carried out.

No cases of proved pulmonary tuberculosis have been encountered in this series. Several have been diagnosed "clinical tuberculosis," but in none of them have tubercle bacilli been found in the sputum, nor were the physical signs conclusive of this condition. Achard and Flaudin had a similar experience. In their series only three cases of tuberculosis were found, and these they classified as "secondary complications". It may be stated, therefore, that there is no evidence to date, that chlorine gas poisoning render the patient more liable to pulmonary tuberculosis.

Considerable interest is being taken at the present time by insurance companies in regard to the influence of gas poisoning on the expectation of life. Too short a time has elapsed, as yet, to warrant any observations on this point. In addition, the number of cases which have been thoroughly followed is too small to allow of any definite statement on this matter.

(The facilities for following the records of the cases reported in this series were provided by the Medical Research Committee, the Canadian Record Office, and the Board of Pension Commissioners of Canada. To all of these we wish to express our thanks.)

POSTURAL ALBUMINURIA

By Malcolm Mackay, B.A., M.D., C.M.

Sherbrooke, Que.

MANY authors state that postural albuminuria is a condition frequently met with, but I venture to say that the average general practitioner does not often recognize the condition in his "daily round and common task" and as this may prove a hardship and even a detriment to the patient, I feel that it will not be amiss to draw attention to the possibility of meeting such a case

As students, we were impressed with the idea that albuminuria meant renal disease, and rightly so; but, as far back as 1878, Moxon pointed out the probability of there being a non-nephritic albuminuria, and Rooke, Pavey, and Sterling confirmed his statements and placed the condition upon a definite clinical basis. Since that time many investigators have used the various functional tests which have from time to time been advocated, and better still, have followed up cases of this type; so that Goodhart is able to declare with authority that such cases are reasonably good risks and should be allowed life insurance; and Dieulafoy states that if these albuminurias are not physiological in the true sense of the word, they are at least compatible with good health, which, clinically speaking, leaves nothing to be desired.

In illustration, I should like to report the case of a young man twenty-sever years of age, who was rejected by three medical boards on examination for the flying corps, the reason for rejection being that he was suffering from nephritis. As he had just been married and considered himself physically sound, he returned to his family physician in some alarm, only to have the diagnosis confirmed. A second specimen, taken later, however, showed not a trace of albumin and he was referred to me in consultation.

The patient was a young man, tall and rather slight, with a somewhat marked lordosis in the lumbar region. He was of a rather nervous disposition, but having no complaints except weakness, which he attributed to restrictions in diet. Examination of

Read at the fiftieth annual meeting of the Association, Quebec, June 27th, 1919.

urine passed in the morning upon rising, showed that it was acid, specific gravity 1026, no sugar, no albumin, no casts, but a specimen passed in the office showed marked albumin, both on boiling and with cold nitric acid. Cold acetic acid also showed a cloud (euglobulin?). The patient was then instructed to lie down, and half an hour later a normal specimen was passed. Next he was placed with his back against a wall, and in twenty minutes the urine was loaded with albumin.

These experiments were repeated on several occasions, and the urine invariably showed some albumin after exertion, and a great deal after a very erect posture was assumed. Janeway has pointed out that a true nephritic albuminuria that shows albumin on standing will show more albumin after exercise; while in these cases this phenomenon is reversed.

A Mosenthal renal function meal was then given with the following result:

8–10	105 c.c.	1022	specific gravity
10–12	184 c.c.	1021	" "
12– 2	220 c.c.	1018	" "
2– 4	315 c.c.	1018	" "
4– 6	300 c.c.	1018	" "
6– 8	84 c.c.	1026	" "
Total day	1208 c.c.		
8–8 night	400 c.c.	1028	" "
Total 24 hours	1608 c.c.		
Intake	1760 c.c.		
Balance	152 c.c.		

Phenolsulphonephthalein test 62 per cent. in two hours.

A case like this is quite puzzling at first, unless one has the condition in mind, and it is obvious that a snap diagnosis of nephritis from a single specimen of urine is like all other snaps—easier to make than to explain away.

Cabot has time and again called attention to the frequency with which nephritis and uremia are mistakenly diagnosed, normal kidneys being found post mortem. On the other hand let us be alert to discover and note the early symptoms of nephritis. We must be more painstaking and more methodical in our routine of examination. In the first place let us examine the patient, and not leave everything to the laboratory. The general appearance, the

history, with the past illness, the physical examination, particularly of the cardio-vascular system, including the blood pressure, blood examination and fundi. (It may seem rather odd to class the fundus oculi with the cardio-vascular system, but here we have the only clearly visible arteries in the body, and far too few of us take advantage of this fact in our general survey of our patients.)

Then we must examine the urine passed at different times of the day. One of the best methods is that following Mosenthal's renal test meal. Unfortunately a functional renal test seems to the average practitioner to present insuperable difficulties, but here is a test which in its simplest form requires only seven bottles and a urinometer. To calculate the nitrogen and sodium chloride is of course important, but a great deal of valuable information may be obtained without carrying out this part of the test. The red test is amost as simple, and costly colorimeters are quite unnecessary, it being very easy to make one with two test tubes.

I have indicated briefly the important differences which are found in comparing nephritis with non-nephritic albuminuria, and now wish to emphasize the fact that although these patients have no nephritis, yet as a rule they are nervous, poorly developed, and in general below par, and our treatment must be designed to build them up and improve their general tone. Correction of posture, plenty of food and fresh air, with regular and regulated exercise will, as in the case cited, bring good results.

Instead of going to Berlin and Vienna for their post-graduate course, young American doctors are likely to go to London, where an exclusively American hospital is about to be built. A meeting will be held to consider the plans at the house of the Royal Society of Medicine; Lord Reading will preside. The scheme, of which Dr. Philip Franklin, the aural surgeon, has been the prime mover, is the result of the close contact of United States and British medical men during the war. Already, in England, there are about two hundred American doctors taking the post-graduate course of the Fellowship of Medicine. The new hospital will become the headquarters for United States medical students who come to Europe, and will be the centre from which the post-graduate will be able to make use of the exceptional clinical material offered by London and the provinces.

ON ACIDOSIS

By A. D. Blackader, M.D.

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SOME apology is needed for the presentation of this paper which represents no original chemical or clinical research on my part but only imperfect observations carried on in a few startling cases seen by me in consultation with other physicians and a study of the investigations and papers which have recently appeared for the most part in more advanced scientific magazines.

Until the investigations of these last few years our knowledge of acidosis has been confused and imperfect; advances have been made slowly and our knowledge is still far from complete.

With the discovery in the urine of large amounts of ammonia about 1880 began the search by chemists for acid radicles in the organism, and this search shortly led to Stadelmann's discovery of oxybutyric acid. Then came Kussmaul's clinical observations on the air hunger of advanced diabetics, followed by Naunyn's statement, made as recently as 1906, that he regarded acidosis as an abnormal metabolic condition in which hydro-oxybutyric acid is formed in large quantities; a statement which led to much confused thought and the persistence in the profession of erroneous views regarding this condition and the so-called acid intoxication.

Lawrence Henderson, of Yale, was one of the early successful investigators of acidosis and in a very interesting paper, which appeared in the February number of "Science" for 1915, presented us with our first clear explanation of its occurrence. Acidosis, in his view, arises from many causes, but must be regarded as a disturbance of the regulation of the alkalinity of the blood plasma and tissues, so severe or so long enduring as properly to be termed pathological. A definite but slight alkalinity of the blood plasma he finds to be one of the most important conditions of life; any serious deviation from which, inducing any definitely acid condition of the blood, renders life impossible. The constancy of this slightly alkaline condition of the blood is maintained by an autonomous

self-regulating power present in all the higher grade of mammals, and this alkalinity appears to be the most carefully guarded of all the constants in the body, among which may be placed, the temperature of the body, the osmotic pressure and concentration of the salines in the blood, and the chemical composition of the tissues, notably as to their nitrogen equilibrium.

The term acidosis has been used in the past in a loose way with considerable range of meaning. Used at first to designate the symptoms which developed when acids were fed experimentally to animals, it is now limited to conditions in which the reserve alkaline salts of the blood have been greatly diminished in amount. This is a condition, however, which, owing to Nature's precautions, takes place very infrequently.* As a result of the various metabolic processes continually carried on in the living body there is a constant production, variable in amount and character, of acid radicles in the system. These are prevented from interfering to any extent with the normal alkalinity of the blood by three processes which under the control of the regulating centres in the body are in continuous activity. These processes are, oxidation, neutralization and elimination.

In the short time at my disposal it is impossible to enter into explanations of the estimation of acidity and alkalinity by the hydrogen-ion and hydroxyl-ion content of the blood plasma, but even without entering into these details we can, I think, obtain a fairly clear understanding of the conditions involved in acidosis by a study of the following facts:

Owing to the presence in the blood of so-called "buffer" salts, a maximum amount of acid is able to be neutralized with a minimum amount of change in reaction. If we take two test tubes, one of which contains an isotonic solution of sodium chloride, and the other a dialysate of blood, the acidity produced by a drop of hydrochloric in the saline will be very much greater than that produced by a similar drop in the blood serum. This is due chiefly to the presence in the plasma of phosphates of sodium and potassium, but also in part to the presence of colloidal protein, which has a definite influence in maintaining an amphoteric reaction.

A rough demonstration of how these salts act in maintaining this reaction may be given as follows:

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*Haldane in a very recent article defines it as a diminuition in the normal slight alkalinity of the blood, and distinguishes between a primary acidosis due to flooding of the body with acids and a secondary acidosis which is an adaptive physiological response to lack of oxygen.—*Nature*, May 1st, 1919.

A solution of acid sodium phosphate has an acid reaction; a solution of ordinary sodium phosphate has an alkaline reaction, but almost any mixture of the two salts is neutral to ordinary tests for acidity, and such a mixture will take up strong acids or alkalies in fairly large quantities with only a very slight change in the character of its reaction.

$$HCl + Na_2HPO_4 = NaCl + NaH_2PO_4$$
$$NaOH + NaH_2PO_4 = Na_2HPO_4 + H_2O$$

There may be a change in the ratio between the amounts of the several ingredients, but the alkaline reaction remains.

Again, free carbon dioxide is present in body fluids at all times, both in combinations, and free, and normally in such concentration and amount that it automatically converts into bicarbonate all bases not bound by other acids The bicarbonate content may thus be considered to represent the excess of basic salts in the blood left after non-volatile acids have been neutralized and also the amount available for neutralization of any further amount of acid entering the blood; consequently it may be spoken of as the alkali reserve of the body. This bicarbonate content ranks in amount as the third important ingredient in the blood, and it is maintained in health at an almost constant level. The limits of variation in its amount may be regarded as similar to those of the pulse rate. A serious depletion of the normal amount will immediately bring on symptoms of acidosis.

Acids and acid radicles are constantly elaborated by the organism from the oxidation of carbon, phosphorus, nitrogen, and sulphur, and find their way into the blood. These must be neutralized so that the normal alkaline reaction may be maintained. The organism of a healthy individual effects this in three ways so that the neutralization of these acids takes place with little strain, and the alkaline reserve remains a constant.

1. Acids formed in the body, or introduced from without, displace the carbon dioxide from the alkaline carbonates in the blood, setting the carbon dioxide free to be removed by pulmonary ventilation. A neutral or acid salt is formed which is promptly eliminated by the kidneys. Alkaline salts of sodium and potassium are introduced in the food to supply the requirements of the blood plasma.

2. The eliminating power of the kidneys is the second defense of the normal alkalinity of the plasma. While it is remarkable that the kidneys are able to secrete an acid urine from an alkaline blood plasma, acid salts from an alkaline serum, it is also very not-

able how sensitive the kidneys of a normal individual are to changes in the amount of acid phosphate in the blood and how they conform their work to the varying amount of acid salts in the plasma. Their prompt elimination of these acids form a most important protection to the normal alkaline reserve in the blood. Pathological changes in the kidney structure may, however, seriously interfere with this elimination and when such interference with elimination takes place, acid salts may accumulate in the blood and induce symptoms of acidosis.

3. The third defence of the system against a condition of hypo-alkalinity in the blood is the system's reserve power of intercepting the ordinary metabolic process for the conversion of waste or excessive nitrogenous material into urea, and forming instead of it ammonia, thus securing another base for the neutralization of any excessive acid formation.

There are two well recognized conditions in which, despite these defences, acidosis may develop. The first is the most notable, and is such a serious disturbance of carbohydrate metabolism, of which diabetes is an excellent example, as may lead to the formation of an enormous excess of acid radicles in the system. These acid radicles make heavy demands on the alkaline reserve of the blood and call forth all the latent ammonia-producing power of the system. In such cases we generally find an abnormal excess of nitrogen produced from the catabolism of the proteins, so that the amount of ammonia formed in defence of the alkali reserve is considerable.

The percentage of urinary nitrogen eliminated under normal conditions in this form is small, not exceeding two or three per cent., but in diabetes, and in other conditions of disturbed carbohydrate metabolism, we find from 10 to 40 per cent. of nitrogen ordinarily excreted as urea now excreted as ammonia.

Notwithstanding this great effort of the organism to save the amount of alkali reserve in the blood, all of us recognize the liability in diabetes to its depletion and to the appearance of the dreaded symptoms of acidosis and coma.

The second condition in which acidosis may develop is nephritis, especially the chronic diffuse forms of nephritis in the adult and the severe acute forms of nephritis in children.

The causes producing acidosis in nephritis, however, are quite different from those existing in the acidosis arising from a disturbance of carbohydrate metabolism. Symptoms of acidosis developing in nephritis are due almost entirely to a defective elimination

of the acid phosphates, a condition met with chiefly in nephritis of the frankly parenchymatous type, and in the early stages of the chronic interstitial and arterio-sclerotic forms, but which may also develop and become pronounced in uræmia arising from any form. A similar condition is sometimes met with in children in whom, owing to a profuse watery diarrhœa, or to high fever with limited intake of water, the urinary output is greatly diminished. In both conditions the acid salts accumulate in the blood, its bicarbonate reserve and normal alkalinity is seriously diminished, and its hydrogen-ion concentration is increased.

The lungs constitute a safety valve against this condition. The slightest increase of this hydrogen-ion content in the blood stimulates the respiratory centre. Variations in the amount of the hydrogen-ion concentration too slight for our existing methods of measurement to determine react on the depth and frequency of the thoracic excursions increasing the amount of oxygen absorbed, and of the carbon dioxide thrown off, and leading to an increased supply of oxygen to the tissues, with a lessening of the carbon dioxide in the blood plasma.

It has been stated also that with the reduction of the normal bicarbonate constant in the blood, there develops an impaired capacity of the blood to convey carbon dioxide from the tissues to the pulmonary alveoli.

In many cases, nature's efforts at elimination restores the normal equilibrium. If, however, the hydrogen-ion concentration continues to rise in amount, the stimulation of the respiratory centre increases; the individual becomes gradually hypernœic, with the blood in his veins not cyanotic but rather brighter than usual, owing to the increased intake of oxygen, while the pulmonary alveolar air and the blood plasma both show, if examined, a marked diminution of the carbon dioxide tension; from a normal of 35 to 40 it may sink to 25 or even 15.

The clinical symptoms indicating this condition are deep pauseless respirations, gradually increasing in rapidity, associated with a stuporose condition gradually deepening into coma; a marked diminution of carbon dioxide in the alveolar air will now be found to fxist. If at an early stage of this condition the alkali reserve in the plasma is restored by the administration of sodium bica-bonate in sufficient amounts either by the mouth or, in severe cases, intravenously, the symptoms rapidly subside; otherwise the hyperna a increases, and life terminates in a comatose condition.

Acidosis may therefore be defined to be a condition in which

depletion of the alkali reserve in the system has taken place with diminution of the normal alkalinity of the blood plasma, manifesting itself clinically by deepened respiratory movements. It is not merely an increased production of acid in the system nor can it be regarded as merely an increase of acid salts in the blood, although both of these conditions may favour its development; neither is it necessarily connected with the presence of ketones either in the blood or in the urine. The important factor appears to be the depletion of the alkali reserve in the blood, with an increased H-ion content in the blood.

The causes bringing about acidosis may be various. It may be due to an excessive production of acid in the system; very rarely, in man, is it due to an ingestion of acid in large quantities, or to a lack of alkali in the food. It may be due to a failure of the kidney to eliminate the acid salts in the blood. Associated with any of these causes may be a failure to produce ammonia in sufficiently large amount; but so far as we know, symptoms of primary acidosis when they arise always imply a diminution of normal alkalinity with depletion of the bicarbonate constant in the blood. The bicarbonate constant may have variations in its amount from many causes, but like the other constants in the body, the variation becomes a danger only when it reaches a certain intensity.

How are we to recognize the early stage of danger? As a rule, increased pulmonary ventilation, as evidenced in deep, full ceaseless breathing without cyanosis, and with no physical signs of obstruction to the entrance of air, always signifies acidosis. The most useful test and at the same time a rational therapy is determining the amount of sodium bicarbonate which will render the urine alkaline. In the normal adult five grammes dissolved in a tumblerful of water will change in the course of an hour or two the usual acid reaction of the urine to an alkaline one. In some individuals ten grammes may be required, in which case a second five grammes may be repeated at the end of two hours. In threatening acidosis, the amount required to render the urine alkaline may often exceed this amount several fold. It is inferred that this retention of alkali is an effort of nature to make good the depleted condition of the blood plasma, and the amount required is not only a test of the degree of acidosis, but is also our best rational therapy.

It appears, therefore, that in all conditions of gradually deepening respirations without cyanosis, "air hunger" as it has been termed, the administration of sodium bicarbonate is called for, and may be given, according to the urgency of the conditions, by the

mouth, by the rectum, or by subcutaneous or intravenous injection. Its administration demands judgment, and caution should be exercised to avoid great excess. Large amounts by the stomach may give rise to, and will certainly increase if previously present, irritation of the gastric or intestinal mucous membrane. If given subcutaneously, the solution should not exceed two per cent. in strength and must be given with careful aseptic precautions. It is to be remembered that solutions of sodium bicarbonate cannot be boiled without the liability of converting the bicarbonate into the carbonate, and if this occur, sloughing of the surrounding tissues may ensue. When given intravenously, the solution should not exceed four per cent. in strength. Tileston has reported a case of tetany after large intravenous injections in a case of Weil's disease.

In the great majority of cases, however, the introduction into the system of sodium bicarbonate from 10 to 15 grammes or more in repeated doses till the urine becomes alkaline, gives prompt relief to the hypernœa and secures a comfortable rest to the patient, and in many cases saves life.

In every case of acidosis, laboratory tests, when practicable, should be made. The urine should be examined for information as to the presence of any undue activity in the system's defences against acidosis, as manifested by the presence of ammonia in large amount. It is to be remembered that an excess of ammonia may also be found after a diet rich in proteins and also in diseases causing an excessive breaking down of protein. Any excess of ammonia found should therefore be considered in comparison with total nitrogen retention. In some cases the urine may show an excess of acid salts, or the presence of oxybutyric acid in large amount; but any such examination of the urine presupposes a normal efficiency of kidneys to excrete acid salts. It is failure to excrete these salts that in some cases is the source of danger. Another important laboratory test is the determination of the CO_2 tension of the alveolar air and of the blood. This is generally regarded as the most important of the laboratory tests for acidosis.

The increase of H-ion content is very difficult to estimate by laboratory methods. Peabody states that any increase of H-ions sufficient to react to tests is only present as a terminal symptom, and Crile also states that in the clinic increased H-ion concentration appeared only in the early stages of dissolution.

Macleod, of Toronto, discussing the diagnosis of acidosis, strongly recommends as the best practical test for guaging any

diminution in the alkaline reserve of the blood the determination of the amount of sodium bicarbonate which has to be introduced into the body to make the urine alkaline. While to a normal man in health the administration of five grammes generally renders the urine alkaline, large quantities even as much as 100 grammes a day may be given when the alkaline reserve is seriously depleted without securing the excretion of an alkaline urine.

The occurrence of acidosis in the adult, if we except cases of diabetes, is, however, infrequent. It is occasionally met with in some forms of nephritis, more rarely in some cases of rheumatic fever; in a few cases of pneumonia, and in severe burns; it is also liable to develop in surgical cases after hæmorrhage and shock. It is met with more frequently in infancy and childhood. During the past three years I have seen five cases. One a young girl of twelve years, the others infants under the age of two years. The condition is liable to occur in severe diarrhœa, and especially in diarrhœa of a choleraic type with greatly lessened output of urine and consequent retention of the acid phosphates. It is also occasionally met with in cases of severe pneumonia in young children in whom the intake of water has been greatly interfered with. Occasionally symptoms of acidosis develop suddenly in an infant when a complete change in its dietary is made owing apparently to a rapidly developing acetonæmia. In a case which I saw last fall, through the courtesy of Dr. Grant Stewart, the infant, ten months old, had been breast fed and was apparently perfectly healthy until two weeks before the onset of the symptoms. The weaning was difficult as the child refused the bottle. Vomiting set in suddenly, the infant became drowsy but irritable when disturbed; the temperature was normal, the pulse was quickened, the respirations were very deep and pauseless. No abnormal conditions were found on careful examination of heart, lungs and abdomen; the nervous system responded normally to tests. The hypernœa gradually increased and on the third day after our examination the infant died in a comatose state but with persistent hypernœa till almost the end.

Four months later Dr. Stewart asked me to see a very similar case, in which an infant, suddenly weaned, developed in a few days vomiting, and deep breathing, the latter increasing in frequency and depth. Death intervened on the third day. There was no cyanosis and no discoverable physical signs in either of these cases.

Howland, of the Johns Hopkins Hospital, reports a very similar case developing in a child of twelve months, which was admitted

into the hospital on the second day of its illness, and died two days later. The only symptoms were the hypernœa and a semi-comatose state. All the laboratory tests were confirmatory of acidosis and nothing was revealed by a careful autopsy. Howland states that he is unable even to suggest the exact cause for the sudden development of acidosis in such cases.

Although instances like the above are met with occasionally, they are not common, but it is important that the symptoms should be treated promptly at their onset. *Acetonæmia* on the other hand is frequently met with, and is generally of slight importance.

Acetonuria is of very frequent occurrence and arises in the majority of cases from deficiency of suitable food. Frew made an examination of the urine in six hundred consecutive cases of children entering the Great Ormond Street Sick Children's Hospital of London, and found acetone bodies on the third or fourth day in 60 per cent. of the urines. The condition was a temporary one and did not appear to disturb the general health. Holt found acetone bodies present in the urine of 30 per cent. of two hundred consecutive cases entering the Babies' Hospital of New York. In both cases the presence of acetone bodies was attributed to the difficulties of feeding children during the first few days of hospital life, rather than to any actual condition of disease.

Acetone bodies may also be found in the urine of the majority of children suffering from infectious diseases, but they appear in no way to add to the severity of the attack.

A statement has been made to the effect that while the appearance in the urine of acetone indicates a mild metabolic disorder, the presence of aceto-acetic acid signifies a more serious disturbance, and the presence of the oxybutyric acid one still more severe. This is not always the truth. It is to be noted that the nitroprusside test for acetone is extremely sensitive, while the tests for the other two are much less so, and consequently urinary reports are sometimes misleading. All three bodies may be found in the blood even in comparative health.

The condition known as recurrent vomiting has been attributed by many writers to a mild state of acidosis. Marfan states that acetonuria is invariably present and in some cases the ketone bodies are in great excess. Nevertheless it is not at present thought that the condition is due to the production of acetone bodies or to acidosis. A few cases have been reported, however, in which acidosis has developed with the formation of aceto-acetic and hydro-oxybutyric acids in great excess, and gone on to a fatal

ending. Howland reports such a case. A child of three and a half years began to vomit without discoverable cause; his food had been carefully given and was rational in character. The vomiting became continuous and the child's condition became worse rapidly. Symptoms of acidosis set in which were relieved at first by the administration of a small amount of sodium bicarbonate intravenously. Acetone bodies were found in blood in great excess. The hypernœa recurred and the child died comatose. No pathological condition was revealed at autopsy.

It is important, therefore, to recognize the fact that in children acetone body acidosis, sufficiently severe to cause death, may develop suddenly, apparently spontaneously; that mere starvation cannot be held responsible, and that some underlying and very obscure metabolic disturbance is thus far the only suggested cause.

The International Conference of Women Physicians opened on September 15th, to continue in session till October 25th. It was held in New York at the headquarters of the War Work Council of the Young Women's Christian Association. All women physicians in the United States were invited to attend the meetings. In addition to this a number of distinguished foreigners were present, many of whom have won fame by their achievements during the war in helping to solve problems of health and morale vitally affecting the armies of the allies, both at home and in the field.

Among the delegates to the conference were Dr. Christine Murrall and Dr. Mary Gordon, of London; Dr. Margaret Giboulent, Dr. M. Thuiller and Dr. Monod, of Paris. Canada was represented by Dr. Ellen Burt Sherrat, Dr. Helen MacMurchy, Dr. Anne Young, Dr. Rosamond Leacock and Dr. Mary E. Crawford. Other delegates represented Holland, Italy, Norway, Sweden, Switzerland, Japan, China and Uruguay and other South American countries.

SURGICAL EFFICIENCY IN AN ARMY MEDICAL SERVICE

By Herbert A. Bruce, M.D., F.R.C.S. (Eng.)

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ONE of the most urgent needs of all the countries engaged in the great European war just finished, was surgeons and still more surgeons. As the supply of skilled surgeons was necessarily limited and never sufficient in the front areas when a battle was on, the problem of making full use of those available was a very pressing and important one. The enormous improvements in the results obtained by early "debridement" of the wounds in the casualty clearing stations, as compared with later operations in the base hospitals, not only in the healing of the wounds and the possibility of primary suture but in the incidence of gas gangrene, was so striking as to impress upon Sir Anthony Bowlby and the other consultants of the British Service, the great importance of increasing the number of surgeons in the casualty clearing stations, so that all the wounded could be operated upon there, if possible. This was the ideal to be aimed at. However, it never became possible of fulfilment during the early period of a big engagement and entirely broke down at the time of the great German offensive of March, 1918.

The organization of surgical teams in the early part of 1917 by the British Medical Service marked a great step in advance in the development of surgical efficiency in the front areas. These teams at first consisted of a surgeon, an anaesthetist, a nurse and an orderly, later of two nurses and two orderlies, a total of six. These teams were mobile units made up in base hospitals and sent up to casualty clearing stations the day before we expected to attack, or were called up when the Hun commenced an offensive.

The normal staff of a casualty clearing station provided only

Read at the Fifteeth Annual Meeting of the Association, Quebec, June, 1919

two surgeons and was sufficient only for peace times, but during attacks this had to be supplemented by eight or ten visiting teams. The great advantage of these mobile surgical teams was that they could be moved quickly to any part of the line where increased activity occurred. In order to still further increase the amount of work the surgeon could do, two operating tables were provided for each surgeon, so that he might be constantly employed and not kept waiting while the table was being cleared and another patient put on it. In order to utilize the special skill of the surgeon to the fullest extent, he should be relieved of the necessity of helping to prepare the patient and many other things which could as well be done by unskilled help.

In the American service so-called "splint-teams" were organized, made up of men specially trained in the application of splints, so that as soon as the surgeon had finished his operation on a fractured limb, the patient was turned over to specially trained men to have the splint applied.

The Director-General of the British Medical Service on the recommendation and advice of the Consulting Surgeons in October, 1917, arranged to have a certain number (two hundred and fifty) of nurses trained to give anæsthetics and to use them in the various hospitals and on surgical teams, thus releasing a similar number of medical officers for other duties. These trained nurse anæsthetists rendered splendid service in the great rush of casualties following the offensive of March, 1918. Their employment from this on gave such good results that regret was felt that they had not been used earlier in the war.

I am able to take some credit for their employment in the British Army, as I had urged it upon the Director-General of the British Medical Service some time previously, but what really made this epoch-making change possible was the wonderful work of the American nurse anæsthetists who went over with the six hospitals sent by the United States early in 1917 to staff British base hospitals in France, and of Miss Nicholson, the nurse anæsthetist with No. 3 Canadian General Hospital. Their splendid work convinced the Director-General and the British Consultants of the value of women (without degrees in medicine) as anæsthetists. British surgeons soon became enthusiastic supporters of nurse anæstheticts, and if the war had continued, there is no doubt they would have ultimately replaced medical officers in the giving of anæsthetics in the British service. This would have released more than five hundred doctors for other much needed work.

You are probably aware of the fact that nurse anæsthetists are employed almost exclusively in the American Medical Service, and most surgeons serving in France are now convinced that women make ideal anæsthetists and their employment in increasing numbers in civil hospitals is assured. The American Medical Service also had "shock teams" consisting of men specially trained in the problems of shock, to work in their evacuation hospitals—the name they adapted from the French for the advanced hospitals which corresponded to our casualty clearing stations.

Even with a dozen surgical teams working in a casualty clearing station, it was only possible to operate upon from 16 per cent. to 20 per cent. of the casualties coming in the first day of an offensive. So that it was clear if all casualties were to be operated upon, we should require four or five times the number of surgeons and a corresponding increase in the operating huts. The provision of two tables for each surgeon increased materially the amount of work he could perform.

Professional efficiency is so intimately bound up with medical organization that it is a matter of the greatest importance that all questions of a purely professional character in our medical service should be divorced from routine matters of organization and administration.

Our permanent medical service before the war consisted of thirteen medical officers. The report of the Minister of Overseas Military Forces of Canada shows that there were one thousand, four hundred and fifty-one medical officers overseas at the end of 1918. Of this number only a small proportion had previously been members of the C.A.M.C. Thus the vast majority were taken from civil practice, and it would seem only fair that these civilian doctors who gave their services at great personal sacrifice should not be punished for their lack of military knowledge, but I regret to say that this is what happened.

One of the most iniquitous things in the medical service was the necessity of eminent medical men being subservient to the administrative heads because the latter controlled promotions, honours and decorations. This war has conclusively demonstrated the fact that the permanent medical organization is not able to cope with the medical and surgical requirements of the army without help from the profession in civil life.

It may be said that surely medical men are above such sordid influences as those referred to above, and I may at once point out that the doctor who leaves his practice and joins a military medical

service, puts his professional reputation in the hands of those in authority in that organization. They can either make or mar him, and it is a well-known fact that it is not necessarily the ablest physician or surgeon who is given the premier position in a military medical organization. In fact one can assert without exaggeration that frequently the reverse is the case.

How then are we to ensure the most efficient medical and surgical service to our wounded? In my opinion, which is shared by the well informed, only by placing in full control of the treatment of the sick and wounded, medical men and surgeons who have proved their superiority in civil life. Such I believe can in no way detract from military efficiency, inasmuch as the administrative heads will be left in control of discipline and organization outside of all purely technical affairs.

I had in view when occupied with the task of reorganizing the Canadian Medical Service in London in 1916, the creation of an advisory medical board of consultants drawn from civil life, two consulting surgeons, two consulting physicians and a consulting sanitary officer who would be charged with the responsibility of the treatment of the sick and wounded, and who would be given authority over the medical and nursing personnel. With the professional side of our medical service in charge of such a board of expert professional men, whose only thought and responsibility would be the care of the sick and wounded, one could be reasonably assured that the greatest care and discrimination would be exercised in the selection of the medical and surgical staffs of the various hospitals to ensure this end. Such a board would be constantly employed in collecting information as to the best methods to employ in treatment and when they had reached a conclusion on any subject, such as the primary closure of wounds, or the use of Carrel-Dakin solution, or the necessity for the increase in surgical teams, etc., all they would have to do would be to communicate their decisions to the Director of the administrative side of the medical service who possesses the machinery for putting these decisions into immediate effect. *He should have no power to review or veto such decisions.* He would be a member ex-officio of the advisory medical board and would be conversant with their work. If the Director-General of Medical Services be (as he usually is) an officer who has not been in close touch with the scientific side of his profession for many years, it would be nothing short of criminal that he be given autocratic powers which would enable him to nullify the decisions of a body of experts.

The American Medical Service, benefitting by the experience of nearly three years of warfare of the British, French and Belgian Medical Services, early arrived at a decision to divorce the purely professional side of their medical service from the administrative side, and appointed Dr. Finney, Surgeon to the Johns Hopkins Hospital, and one of the leading surgeons of America, as Director of the General Surgery in France, with the rank of Major-General. They appointed Dr. Thayer, one of the leading physicians of America, as Director of the medical side of the service in France, with the rank of Major-General. Dr. Finney surrounded himself with a number of eminent surgical specialists whom he placed in charge of the various specialties of surgery, notably Dr. Hugh Young in charge of genito-urinary surgery, Dr. Harvey Cushing in charge of neurological surgery. He then appointed a number of consulting surgeons and assistant consulting surgeons for the various armies. This entire organization was responsible to him and he was the sole director of it. The result of this was that although America did not get actively into the war until July, 1918, at the Armistice, America probably had the most progressive and efficient medical service on the continent. In saying this, I do not wish to be understood as in any way deprecating the wonderful work done by the British Medical Service. In fact, many American medical officers acknowledged their deep indebtedness to the British Medical Service for much valuable information which they made full use of in the organization and development of their own service.

We had no Canadian Consulting Surgeon for our Canadian hospitals in France during the war.* We had no Canadian officer in charge of our hospitals in France until about a month before the Armistice, when a Canadian Director of Medical Services was appointed. The cumbersome method and delay to say nothing of efficiency and waste of money which the absence of a Canadian officer in charge of our hospitals in France involved is well known to all medical officers who saw service in France.

Although we missed the opportunity of this development during the war that is just over, the subject is one of such paramount importance for our future medical service (because none of us have

*Our Canadian Hospitals in France were, of course, visited by the British Consulting Surgeons of the area in which these Hospitals were situated, but, they were of no real value in checking up the work of the surgical staff, because, they felt such action on their part would be resented by the Canadian Authorities. Their duty was to report only to the British Medical Service in France, whereas, the Medical Personnel of Canadian Hospitals in France was directed and controlled by Canadian Medical Headquarters in London.

the Utopian belief that this is the last war) that we should benefit by our experiences as well as our mistakes, and now in times of peace insist upon our army medical service being developed into a sound strong and efficient organization for the future; and, gentlemen, this can only be done by the profession insisting upon the Government securing the *advice* and *co-operation* of some of the able men who have seen service in this war, all of whom will soon be demobilized.

I should like again to pay a tribute of respect and admiration for the excellent character of the work performed by the medical officers in the C.A.M.C. during these five years of war, at great personal sacrifice.

The provincial bureau of public health has completed arrangements with the federal health department for the expenditure of Saskatchewan's share of the $200,000 voted at the last session of the federal parliament especially for the purpose of combatting venereal diseases. The announcement was made recently by Hon. George Langley, minister in charge of the health department. The amount Saskatchewan receives will be between $16,000 and $17,000. Under the plan which has now been perfected a similar amount will be expended by the provincial government, so that for this special purpose some $35,000 will be available during the next twelve months. Efforts will be made to distribute the benefits of the grant to all parts of the province. Some ten or more clinics will be established in different districts, and, generally speaking, these will be associated with public hospitals. At these clinics the work of diagnosing suspects will be undertaken, and preventive and curative measures applied.

The medical profession has assured the bureau of public health of their active co-operation in efforts to stamp out these diseases in the province. It is the intention to employ a competent and experienced medical man as superintendent who will undertake a general supervision of venereal diseases, and the local work at the clinics will be in charge of local practitioners. The grant from the federal authorities will be devoted to paying the practitioners in charge of the work at the various clinics, while the contribution made by the Saskatchewan government will be expended in providing accommodation and equipment, and the necessary laboratory expenditures that may be involved.

TICK CAUSED PARALYSIS

By John L. Todd

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FOR years, general practitioners in Southern British Columbia and in the north-western part of the United States have known that children, when bitten by wood-ticks, sometimes develop paralysis. The paralysis may be fatal; but the children usually recover and the paralysis disappears if the ticks are removed.

Records of such cases were first printed in this Journal[1]. Temple[2], and Bishopp and King[3], a little later and independently, and Cooley[4] published records of similar cases from the United States; while Cleland[5] and Eaton[6] described paralysis of a similar association in Australia; and additional cases were recorded from British Columbia.[7] It was also reported that in British Columbia and in South Africa a paralysis of sheep is attributed to the bites of ticks. Hadwen[8], and Hadwen and Nuttall[9], by feeding ticks on lambs and a puppy, were able to produce paralysis in the laboratory.

At the middle of 1914 it was known, then, that paralysis of children in Western North America and in Australia, and paralysis of sheep in British Columbia and South Africa, followed the bites of ticks. That the bites of ticks, *Dermacentor venustus*, from British Columbia, might be followed by paralysis in experimental animals was also known. During the war, additional cases of tick-caused paralysis in children have been recorded from Australia[10] and from British Columbia[11], and Doctors W. T. Thornton and F. W. Green reported the two following cases:

1. In May, 1917, a three-year-old child, said to have been perfectly well on the previous day, was examined. The child's temperature was 101° F.; its body was limp and muscular weakness, rather than paralysis, was general. Examination showed the presence of a tick. Recovery followed its removal. (W. T. T.)

2. A girl child (aged ten?), who had gone to bed apparently well, fell when she attempted to get up next morning. It was found that her legs were paralysed; knee jerks absent; consciousness unimpaired. Her temperature was normal and her pulse was

slightly quickened. On this, the first day, the child felt well but developed choreic movements. On the mornng of the second day, paralysis of legs and abdominal muscles was complete. On the third day paralysis had ascended and both arms were completely paralyzed. Consciousness was still unimpaired. An engorged tick, found embedded in the head, was removed. On that night she breathed with difficulty, the respiratory muscles gave evidence of commencing paralysis. Next morning the pulse was greatly quickened, her heart was weak, and the child died from respiratory failure at noon of the fourth day. At no time were the sphincters affected nor was there a rise of temperature. The tick removed from the head was *Haemaphysalis cinnabarina.* (Identified, through the kindness of the Chief of the Bureau of Entomology, United States Department of Agriculture, by F. C. Bishopp. This observation associates a second species of tick with the occurrence, in British Columbia, of paralysis in children.)

Three other, not completely engorged, ticks (*Haemaphysalis cinnabarina*) were removed, in the same year, from children by Doctor Green and his partner, Doctor R. E. L. McKinnon. This is the only case in their practice in which ill effects, other than a local inflammation, has followed tick bites.

From the evidence accumulated, it seems certain that ticks may cause paralysis in human beings, especially in children. In rural districts, physicians who examine cases of progressive and sudden paralysis should make it a practice to search for a tick. They are most often found about the back of the head and neck. If a tick is found, it should be removed carefully and be sent, living if possible, to a laboratory for examination and identification. If the tick's head be torn off and left fixed to the skin, the bite may become infected and an ulcer be produced; some of the local infections which have been reported to follow tick bite were exceptionally severe.

Nothing definite is known of the manner in which the local and general effects of tick bite are produced. In order that knowledge of these things, and of the distribution of tick-caused disease, may be increased, it is urged that practitioners who meet with cases where symptoms are associated with the presence of ticks, should record their experience.

References:

1. Todd, J. L.—1912. The Can. Med. Assn. Jour., 2: 686 and 1118; 1914, 4: 825-826.
2. Temple, I. U.—1912. "Acute Ascending Paralysis or Tick Paralysis." *Med. Sentinel* (Portl., Ore.), 20: 507-514.
3. Bishopp, F. C., and King, W. V.—1913. "Additional Note on the Biology of the Rocky Mountain Spotted-Fever Tick." *Jour. Econ. Entom.*, 6: 200-211. *Abstr. in Trop. Dis. Bull.*, 2: 203-6.
4. Cooley, R. A.—1913-14. "First Biennial Report Montana State Board of Entomology."
5. Cleland.—1912. *Austral. Med. Gaz.*, 32: 295-296. *Abstr. in Trop. Dis. Bull.* 2: 203-6.
6. Eaton, E. M.—1913. "A Case of Tick Bite followed by Wide-Spread Transitory Muscular Paralysis." *Austral. Med. Gaz.*, 33: 391-394. *Abstr. in Trop. Dis. Bull.*, 2: 203-6.
7. Todd, J. L.—1914. "Tick Paralysis." *Jour. of Parasitol*, 1: 55-64.
8. Hadwen, S.—1913. "On 'Tick Paralysis' in Sheep and Man, following Bites of *Dermacentor venustus*." *Parasitol.*, 6: 283-297.
9. Hadwen, S., and Nuttall, G. H. F.—1913 "Experimental 'Tick Paralysis' in the Dog." *Parasitol.*, 6: 298-301.
10. Strickland, C.—1915. "Note on a Case of 'Tick Paralysis' in Australia." *Parasitol.*, 7: 379.
11. McCaffrey, D.—1916. "The Effect of Tick Bites on Man." *Jour. of Parasitol.*, 2: 193-4.

The Orthopædic and Surgical Appliances branch of the department of Soldiers' Civil Re-establishment have depots scattered throughout Canada where disabled men can receive immediate attention. Both this and the research branch of the department was organized to keep constantly in touch with the progress of other countries, and also to experiment from time to time with a view to the improvement and the securing of the best appliances upon the market for the Canadian disabled.

An important conference was recently held in New York City to discuss the best means and methods of overcoming the handicap of war as represented in our maimed and wounded heroes. Representatives from Canada, the United States, France, Belgium, Italy and Great Britain attended this conference and the consensus of opinion was that appliances in the form of hooks had, up to this time, proved the most beneficial and practicable substitutes for the human hand. Types of artificial arms which embodied movable fingers, mechanically operated, were given thorough consideration by the orthopædists present, who finally came to the conclusion that, owing to the complicated mechanism necessary, such types of hands would not have a lasting practical use.

TOWN PLANNING AND CIVIC AUTHORITIES

By J. E. Laberge, M.D.

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THE object of town planning is to make a city more convenient, efficient, beautiful, and, above all, more healthy. The term "town planning" is thus a general one and includes physical planning such as transportation, public works, supplies, utilities, social, legal, financial planning, and hygiene, the aim of which is to check the dangers inherent in a grouping of individuals. One of the most important subjects to which many sanitarians have given much thought is the housing problem.

The subject of housing is one that should pre-occupy all those who have to deal with public hygiene, and especially, the municipal authorities. However, we much confess that, until of late years, this important matter received little consideration from public authorities; this is due, gentlemen, to the ignorance of the public in matters of hygiene. Even among our own colleagues of the medical profession, the knowledge of hygiene is very rudimentary; many physicians rest satisfied with the ordinary routine of their practice and their studies, their work does not extend beyond the realm of pathology; very few, unfortunately, take a serious interest in matters of hygiene. And yet, is not the hygienist the guide and the sanitary adviser of our families? The construction and maintenance of attractive and healthy habitations are amongst the principal objects of hygienists, and the same should also be the aim of our colleagues in the medical profession, as well as the aim of municipal authorities. These two important factors, "sanitation" and "hygiene", naturally lead one to seek for pure air and sunlight which are the two important agents necessary to keep our body in good physical condition or to restore impaired health.

The public is not generally refractory to sanitary legislation and, if we see so many unhealthy dwellings in large cities, it is due to the ignorance of the principles of hygiene; and as sanitary law

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can only have a beneficial effect when it is in accordance with the public conceptions, it follows that education and legislation should be the two great factors necessary to improve the actual state of affairs in so many cities of this country.

The problem of sanitary habitations for all classes of the population is, it is true, of a rather complex nature; therefore, we must have recourse to all scientific and philanthropic associations; to the working classes as well as to the liberal professions or to the great financiers; in a word, it is necessary to rely upon every person of good will in order to secure for the population pure air and sunlight in abundance.

How many families live in narrow and dark wretched lodgings where the sun's rays never penetrate? What restoring sleep will the tired workman find coming back home after his day's labor to breathe mepyhtic air, and to introduce into his organism bacteria which will find in a weakened body a medium favourable to their development? Very often this workman will leave his sad dwelling to go to a tavern where alcohol will hasten the fatal solution.

The question of housing should be embraced in all social reform works; that is to say, each and every one should co-operate to assure healthy habitations. Persons espousing this laudable cause will not be sufficiently prepared for the struggle if the governments, whether federal, provincial or municipal, do not lend their assistance. It is not simply a legislative intervention that is necessary, financial aid is of prime importance.

Education is also an important factor; because in order to transform permanently the condition of dwellings, the habits and morals of the people must be changed; they must be made to understand better the actual state of affairs; they must be inculcated with the desire of cleanliness, and finally they must be made to appreciate the benefits of sunlight and pure air to preserve human health.

Instead of leaving to the initiative of individuals or of speculators the care of laying out streets more or less wide, rather the latter than the former, whoever the authorities be they should take in hand this transformation, and by buying, to sell later on, all vacant lots in a given radius, should, after having made the necessary improvements, sell these lots, while making certain restrictive conditions which would prevent, to the detriment of æsthetics, certain persons from erecting structures which would depreciate the surrounding buildings.

Before a public administration determines the undertaking of

a sanitary measure of this kind, the problem to decide upon requires intervention on the part of the hygienist, because of his knowledge of public sanitation; of the financier, because this work calls for extraordinary expenses; also of the engineer who by his knowledge and training is well prepared to tackle any problem for future city expansion. But, all hygienists, financiers, and engineers are not all equally qualified to fulfil this task; they must be learned, of great conceptions, they must be persons who foresee the future, they must be persons of duty, whose activity increases according to the difficulties to be encountered, people for whom difficulties only exist to be overcome; in fine, people for whom difficulties have the allurements of a stimulant and not of a sedative.

The public do not always choose such qualified men to administer their affairs; they sometimes consider as worthy of such a task a man who has been able to make a certain trade successful. This man may be a clever tradesman, but he is not necessarily a business man in the strictest acceptation of the word. As financier, here must be understood the man who conceives the needs, not only for the present, but who foresees for twenty, thirty years hence, the man who can say: "In ten, in twenty years, we will have a population of so much, an income of so much, and we will have such and such sources of income to pay for the improvements." The real business man will be the one who will find the necessary money to make successful all great public enterprises which are needed.

The engineer or the expert city planner will foreknow the need for a great boulevard, for a park, for a sewer system of such or such dimensions to meet the requirements of the future; a man who will secure for a city a water supply free from all possible causes of contamination.

Opportunists are not needed to administer a large city; the men required are those who are continually in quest of progress, and who are able to secure it.

In our American cities the methods of rendering a town sanitary differ from those now employed in European cities, which are surrounded by thick walls and deep ditches. All around our cities there are fields, large open spaces which a municipality could acquire to divide into building lots, according to a well studied uniform design which would be transformed into attractive suburbs, new wards, having all desirable modern arrangements such as large parks, wide avenues, securing abundant aeration,

proper light for the houses, abundant supply of water free from all contamination, underground wires, etc. This perfect hygienic arrangement of these new wards is only possible if municipal authorities take it in hand as above suggested; left to private initiative, these new wards will be just as bad, if not worse, than the old ones.

Nowadays, the facility and cheapness of communication by trolley cars almost cancel distances. Workmen are transported from one end of a city to the other for but a few cents, and the distance to the workshops is no longer an obstacle to the convergence towards the periphery of great agglomerations of people.

Under such conditions, a progressive administration, with expenses relatively low, would make great improvements, the result of which would be to render sanitary and to facilitate the circulation of a whole ward. Moreover, the great increase in the population of certain centres requires new ways of communication; the opening of long and wide boulevards, and the rendering healthy of these old wards by making parks which will be wells of air and light in those overcrowded centres where the houses are insalubrious habitations, in which light and pure air seldom penetrate. All these ameliorations will necessarily make these lodgings disappear; these lodgings, where nothing but ruin and misery are to be seen; where ignorance, routine, the evil glare of cities, inveterate habits, too often unhealthy and costly, confine the population in these centres where physical degradation awaits them.

As a consequence of these great transformations the people who lived in these centres will be taken to those essential spots, where light, air, and space are not spared; this is what I call making headway, notwithstanding the increased cost for public works and public utilities.

These improvements cannot be made without exciting much criticism from narrow-minded people; but the general interest must always prevail.

In most of the larger cities, there exists a certain sordid and unhealthy district called slums, inside of which throngs of people are gathered, and where their mode of living, their limited means, their ignorance of the most elementary principles of hygiene and cleanliness, predispose them to infection and physical disablement. These clusters of insalubrious houses are so many sources of contamination in which death, especially infantile death, reaches surprising proportions. The necessity of causing these clusters to disappear is uncontested by all those who have to deal with public

health. But it is necessary to know these unhealthy spots and the authorities can only get a clear idea of them by establishing sanitary records of all the houses in each municipality. This index will be the guide which will lead them in such an important work of finding out and correcting the unhealthy areas.

But the main obstacle to these improvements encountered is their expense. A good administration, helped by just and equitable laws, can reduce these expenses to a minimum. In fact our aim should be:

First: To suppress speculators who are always upon the watch for these great improvements and are an obstacle to their realization.

It seems to me that expropriation would be made more easy and just if the legislature enacted that, for expropriation purposes of public interest, a municipality could in a few years, let us say, three or four years, buy the land to be expropriated at the municipal estimate price of the last four years, plus 20 per cent. By this method the municipality would know exactly what the cost of a projected expropriation would be. The owners will be interested in seeing that their real estate be always reasonably taxed. Nowadays expropriation laws protect private individuals to the prejudice of the community; it is the reverse which ought to exist.

Secondly: To institute in each municipality a card-index system for all the houses, and to amend by-laws in order to render them efficacious and in accord with all the needs. The by-laws should make the proprietor responsible for the good-keeping of his house; and this for his own interest because his property will deteriorate less and not lose in value; owners are particularly interested that their city be a healthy one, and that its welfare shall not be compromised by unclean and careless tenants. The owner can always compel a tenant to keep his premises in good order, or oblige him to leave. Municipal authorities are not always able to do so; the tenant owns nothing and the authorities have no recourse against him. In fact many landlords are satisfied with their tenants as long as they pay their rent, they don't worry about the cleanliness of the property. If landlords let to a tenant who creates nuisances on his property, the landlords should be held responsible for such nuisances. They should not be allowed to rent houses to tenants with filthy habits and who are a danger to the community.

Moreover, owners should be compelled to keep their houses in good order at all times and fitted for human habitation. Such

a law, I consider, would do away with slums, and undesirable tenants would either have to change their unclean ways or be forced to leave the country. To reach this aim, city authorities should know the places where the nuisances exist, and it is for that purpose that I consider the government should make obligatory on every municipality the keeping of a record of each house in the said municipality. This work should be done yearly, and in large cities, wards should be divided into districts, and for each district, inspectors should be made responsible for the cleanliness of streets, houses, and yards therein.

I consider this thorough inspection the first and the most important step towards a successful fight against infantile mortality, tuberculosis and all contagious diseases. Good clean lodging-houses are preventatives of disease. Hospitals, sanatoria, baby welfare leagues, are excellent measures, they are palliative measures; they are necessary, but only when the diseases have appeared; secure for the public the maintenance of good clean lodging-houses and the necessity for hospital dispensaries will greatly diminish.

In conclusion, I may say that the great remedy to such a state of affairs in so many cities is education of the people. Let the people know the consequence of bad lodging-houses, let the people know the place where they exist in each locality, and in a short time these nuisances will disappear. If I am permitted to look at the question in a broader sense I will say it is education, that will induce citizens to choose representatives possessing the indispensable qualities required to carry out such a programme to their satisfaction.

It is education that will make out of all citizens men animated with the desire of seeing their city populous, beautiful, sanitary and prosperous. To obtain these aims such men will not hesitate to impose upon themselves all the necessary sacrifices asked by the representatives they have placed at the helm.

NOTES ON HOUSING AND TOWN PLANNING

By Emile Nadeau, M.D., P.H.D.

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IN connection with public health progress in Canada, it is worth noting the new venture of the Federal Government to provide State aid for housing and town planning purposes, by lending to the provinces a sum of twenty-five million dollars at 5 per cent. interest, redeemable in twenty or thirty years.

The movement for better housing and town planning has had a wonderful success in Europe, and especially in England, during the last twenty-five years. Thanks to the good pioneer work of Lord Leverhulme and Mr. Cadbury, who built the first garden villages in England, the first at Port Sunlight and another at Bourneville; thanks also to the efforts of the English Garden Cities and Town Planning Association there are actually in England about one hundred and fifty model developments built according to modern garden city principles.

The garden city of Letchworth started in 1903 on four thousand five hundred acres of bare land, thirty miles north of London, for an ultimate population of about thirty thousand people, is now about half completed with a population of fifteen thousand and over sixty first-class industries. The last official figures show that the annual death-rate is only ten per thousand of population, and the infant mortality rate as low as thirty per thousand births.

During the war, the British Government has built the garden cities of Gretna and Well Hall for munition workers.

As a result of conscription in Britain, it has been found that only one out of three recruits was absolutely medically fit for military service. It was also proven that the proportion of medically unfit in the big cities was far higher than that of the rural centres, while recruits living in the garden villages, suburbs or cities gave a very low number of medically unfit.

These facts and figures have opened the eyes of the British authorities. The result has been such that the prime minister,

Mr. Lloyd George, has put in the budget a sum of fifteen hundred million dollars for the purpose of building in England one hundred garden cities for housing five hundred thousand families.

Our American friends, on the other side of the border, were not the last to find out what was going on in England. A few housing and town planning reformers went to England to investigate conditions fully. On their return to the United States, the government was induced to vote a total sum of one hundred and ninety-five million dollars for the purpose of promoting model developments along garden city principles, for munition workers and employees of the Emergency Fleet Corporation.

At the date of the signing of the armistice, November 11th, there were in process of execution by the United States Housing Corporation, ninety-four model developments designed to house, along garden city lines, seventy-five thousand workers.

Unfortunately, soon after that date, the United States Senate, in spite of strong opposition, saw fit to have cancelled fifty-four projects that were not 75 per cent. completed, but it is hoped that some means will be taken through State initiative to have the whole undertaking carried through to completion.

We, in Canada, have been, up to the present date, the last to enter the field of housing and town planning reform, but it may reasonably be expected that we can make the experiment successful, in view of the fact that we have at our disposal the practical experience gained in some other countries, during the last twenty-five years.

It may be that it will require some months of careful study of our own conditions before we can actually start model developments in this country, but as we have been working hard for the last three hundred years to create our numerous slums, it might reasonably be expected that we can take a year or so to prepare our anti-slum serum and secure, at an economic cost, the most suitable land upon which the serum might best be injected.

INTERNAL HYDROCEPHALUS AND XANTHOCHROMIA OF THE SPINAL FLUID

By A. H. Gordon, M.D.

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THE subject of yellow colouration of the cerebrospinal fluid with or without other abnormal features, such as (*a*) high proteid content, of which coagulation *en masse* is one phase; and (*b*) the presence of an abnormal number of cellular elements; has for some years attracted consderable attention in the differential diagnosis of certain conditions involving the cord and its membranes.

The paper of Froin in 1903 describing the findings from successive punctures in a case of cerebral hæmorrhage was followed by another from the same author in the *Gazette des Hôpitaux* of 1903, in which he describes three cases in which were found three constant features:

1. A yellow coloured fluid from the lumbar puncture.
2. Massive coagulation of the fluid.
3. Abundant lymphocytosis.

Clinically, these cases had been diagnosed:

a. A meningomyelitis of the conus terminalis.
b. Some type of myelitis.
c. A type of Landry's paralysis.

The first autopsy upon a case showing these features in the spinal fluid was reported by Cestan and Ravaut in the *Gazette des Hôpitaux* in September, 1904. The post-mortem examination revealed the following facts:

"The cervical, dorsal and lumbar regions of the cord are absolutely normal and without adhesions. Toward the second sacral segment there appears some thickening, spreading from the anterior to the posterior roots, involving the arachnoid and the cord. A little lower a band surrounds the cord, firm but vascular, communicating with the pia and dura mater. The band is 3 cm. in width, and below involves the lower part of the conus and the

cauda equina. The subarachnoid space below the band is cut off from that above it."

The pathological process was apparently the cicatrix of an old syphilitic meningitis. The patient had had syphilis, and her clinical symptoms were those of a lesion of the *cauda equina*. In this instance, the puncture fluid had shown a well marked xanthochromia, massive coagulation, a large number of lymphocytes and some red cells.

The next autopsy was reported by Sicard and Descamps, October 20th, 1908. This was also reported in the *Gazette des Hopitaux*. This case was a woman of thirty-nine with a painless spastic paraplegia, upon whom four lumbar punctures had been done, two showing yellow fluid with coagulation, two clear and not coagulating, but all showing a moderate lymphocytosis.

On post-mortem examination, an unidentified type of granuloma was found surrounding the cord and adherent to the dura from the tenth dorsal to the second sacral segment. There were patches of œdema in the pia, and marked congestion of the vessels of the cord. In this case, as in the previous one coming to autopsy, one common factor was present—the isolation of the portion of the subarachnoid space below the lesion from that above it. In this cul-de-sac appeared the abnormal reaction described above.

Aubrey, in his *Thèse de Paris* of 1909, quoted fourteen cases showing Froin's syndrome, including those noted above.

Mestrezat, in 1912, reported twenty-one cases, including the cases mentioned above.

In 1912 Raven in the *Deutsche Zeitschrift fur Nervenheilkunde* had collected forty-seven cases of yellow coloured spinal fluid, but none of these showed massive coagulation.

Reich and Schwartz, about the same time, also reported yellow fluid without coagulation, but Kleinberger, without any reference to the cases in the French literature, reported four instances with the complete Froin's syndrome, and concluded, on the basis of his findings in three of these cases which were operated upon and which showed tumours in the spinal meninges with adhesions to the cord, that the syndrome indicated a separation of the canal into two parts, involving a consequent separation into two lymph systems.

Mix of Chicago had up to 1915 found thirty-three cases on record, only one of these that of Collins and Elsberg occurring in America; and he himself reported a case which was operated upon by Murphy, who found a tumour of the *cauda equina*.

Sprunt and Walker, in January, 1917, quoted one hundred and five cases of xanthochromia, and divided them into two groups, *one* showing the presence of hæmoglobin, only a moderate amount of globulin, and which did not coagulate spontaneously; *the other* group showing the classical Froin syndrome of massive coagulation, large amounts of globulin and with lymphocytosis either present or absent.

It is interesting to note that the German cases are largely those showing the Nonne syndrome, or increased globulin content without an increase of cells, while in the French cases, predominant reference is made to the aspect of massive coagulation as described by Froin.

Of Sprunt and Walker's one hundred and five cases, sixty-five came to operation or autopsy, and in these, 70 per cent. showed some form of tumour of the cord. In seventy-one cases, where cell counts had been made from the spinal fluid, thirty-eight showed an increase, and thirty-three showed no increase.

Ellsberg and Rochfort, in June, 1917, reported ninety-two cases of operation within the spinal canal, and found in these yellow fluid in twelve, but only in one-half of these was spontaneous coagulation present. All of the cases showing yellow fluid had tumour of the cord.

In addition to these well marked cases, a number of others are found not conforming in all particulars to Froin's classical syndrome. The variations are made up:

a. Absence of xanthochromia. (Lepine and Froin.)
b. Cases showing xanthochromia and massive coagulation on some punctures and not on others. (Sicard and Descamps.)
c. Cases showing yellow coloured fluid without massive coagulation. (Kawashima and Mestrezat.)
d. Cases showing yellow coloration and cellular increaseu with large amounts of albumin, but without massive coagulation.

In view of the abovementioned cases, I feel justified in reporting the following:

F. L., age thirty-three. Case, medical, No. 5, 1918. Was admitted on January 1st, 1918, apparently uncorscious, into the Montreal General Hospital. He had become unconscious on November 26th while at his home in Vermont, and was taken to a hospital. Slight fever developed and the case was regarded as a

meningitis. He was brought to this hospital by his brother, who furnished this information. The family history is negative.

Present Condition. He lies in a blank stuperous condition, answers simple questions, *e.g.*, name, age, residence, etc. Does not know what day of the week or year it is, nor length of time in hospital. Mouth is extremely foul in spite of constant care. Nutrition is poor, skin inelastic and tissues dehydrated. Incontinence of urine and fæces is persistent. Pulse 120, small and soft. Respiration 20. Temperature $99\frac{2}{5}°$. Pupils dilated, react very slightly to light. Limbs when flexed or raised remain in that posture—"lead pipe rigidity"—but there is no paralysis of arms or legs. Sensation is present. Knee jerks are diminished, but present. Babinski phenomenon absent. Distinct rigidity of the neck, but no pain on flexion. Abdominal reflexes present. Complains of headache and has vomited two or three times. Blood pressure 135. No diastolic register. Fundi—nerve heads clear cut. No retinitis. No choroidal tubercles.

Blood—red blood corpuscles, 4,200,000; white blood corpuscles, 10,800; hæmoglobin, 90 per cent.; different count, polymorph., 72 per cent.; small lymphocytes, 22 per cent.; large lymphocytes, 4 per cent.; eosinophiles, 1 per cent. Wassermann, negative.

Lumbar puncture was done on three occasions, January 3rd, 7th, and 15th. On each occasion the fluid was orange yellow, did not coagulate. Noguchi reaction, + +. Nonne reaction, + +. Cell count, 250 per c.m.m. Lymphocytes, 90 per cent.

Chemical blood test was positive. Wassermann negative. No organisms found on smear or culture.

Throat culture showed no Klebs-Loeffler bacilli.

Other systems showed nothing of importance.

The mental condition became steadily more drowsy and emaciation progressed, and he died on January 16th.

The antemortem diagnosis on the basis of the lumbar puncture, with a partial Nonne-Froin syndrome, together with the anomalous nervous signs, was internal hydrocephalus, the result of a chronic meningitis, isolating the spinal from the cerebral subarachnoid space.

Autopsy 1-18-13 (abstract).—*Head.* The scalp and calvarium are negative. The dura is quite tense. The brain is large, fills the cranial cavity. The convolutions are flattened, the sulci obliterated. The vessels are quite prominent. The meninges are smooth. The vessels at the base are not atheromatous, and there is no acute nor chronic inflammatory process recognized on careful gross study.

The brain flattens out against the surface upon which it rests, suggesting softening of the tissue, or fluid. This is explained upon laying open the lateral ventricles which are found to be markedly distended with fluid, *which shows no yellow colour;* their capacity is approximately twice the normal. All the ventricles are found to be correspondingly enlarged. There is no evidence of pus or blood. The foramen of Magendie cannot be identified. No tumour nor adhesion is found in the cord or its membranes.

Histological examination. There is lymphocytic infiltration of the meninges throughout, without any evidence of involvement of brain tissue. This infiltration is most marked about the blood vessels. There is no evidence of acute inflammatory reaction.

There is a chronic meningitis, not tuberculous. It resembles the lesions produced most commonly by the meningococcus and bacillus influenza as described by Rhea.

In the now considerable number of cases of xanthochromia on record, I have only come upon one in which the condition was associated with an internal hydrocephalus. This was a case reported by Hanes in 1916, of tuberculous tumour of the medulla in a baby, blocking the pia arachnoid space at the level of the foramen magnum. In practically all cases of xanthochromia, however, which have been examined, either surgically or at autopsy, there has been found a cul-de-sac of the subarachnoid space either due to tumour or some form of meningitis. The anatomical condition found in a hydrocephalus of the closed type is not dissimilar, the only difference being that the space closed off is of greater extent in hydrocephalus.

One might here revert to the distinction drawn between the communicating and non-communicating types of hydrocephalus in the very convincing papers of Dandy and Blackfan. In the communicating type, one or more foramina remain open in the roof of the fourth ventricle, allowing the ventricles to communicate with the spinal subarachnoid space, but on account of adhesions between the brain stem and the tentorium there is no communication between the ventricles and the cerebral subarachnoid space. In the non-communicating or obstructive form, all of the foramina are closed and no communication between the ventricles and the subarachnoid space is possible.

Their conclusions are that the cerebro-spinal fluid is formed in the ventricles by the choroid plexuses, but that there is no absorption from the ventricular cavities, all absorption taking place

from the subarachnoid space When, therefore, the subarachnoid space is shut off, either in whole or in part, hydrocephalus results.

The injection of phthalein into the ventricles is the method of clinical distinction between the communicating and the non-communicating types. In the communicating type, this finds its way readily into the spinal subarachnoid space. In the obstructive type it does not appear in the spinal space.

Normally when phenolphthalein is injected into the spinal subarachnoid space, it appears in the urine as follows:

1st hour	16	per cent.
2nd "	17	"
3rd "	13	"
4th "	7	"
5th "	4	"
6th "	2	"
7th "	1	"

In hydrocephalus, the first appearance is not before thirty minutes, and never more than 1 per cent. appears in the first two hours. This is probably due to adhesions shutting off the greater or cranial portion of the absorbing subarachnoid space.

It has been further shown that all absorption from the canal is through the blood stream. Catheterization of the thoracic duct and of the urinary bladder in experimental animals after the injection of phthalein into the spinal canal shows practically none passing out by the lymph stream, practically all by the blood. An injection of lamp black or India ink into the subdural space shows no exit of granules after two or three hours.

These observations offer a rational explanation for the development of hydrocephalus, and would offer at least the suggestion that the bodies responsible for the colouration of the spinal fluid may not be picked up by the outgoing lymph stream, and when there is a limited area for absorption– as in the cul-de-sac formed by tumour or other obstruction on the one hand, or by the cutting off of the spinal subarachnoid in hydrocephalus on the other hand— such materials might tend to continue in greater concentration. The question naturally arises as to the nature of this colouring substance.

In a large number of the cases, either free blood cells, or the chemical evidence of blood have been found in the fluid. In other instances, chemical tests have failed to show the presence of hæmoglobin.

I am not aware of any observations which have identified any other pigment than that found normally either in the red cells, or in the plasma. In this connection, Froin's first case—the case which probably first brought the subject into view, is of interest.

This patient with cerebral hæmorrhage, confirmed by autopsy, had nine lumbar punctures between the first and the twenty-first days of his illness, and the colours of the fluid drawn varied from cherry-red to red, reddish yellow through light yellow to absolute limpidity. The red cells were found in diminishing numbers, serum albumin and globulin in varying amounts, and spectroscopic evidence of hæmoglobin disappeared some time before the fluid became colourless. Unfortunately no chemical tests for blood were made. The characters of the fluid in the later punctures strongly resembled the findings in many of the cases of xanthochromia reported above.

Considerable discussion has taken place as to the nature and origin of these abnormal fluids. Babinski would postulate a hæmorrhagic meningitis, but many cases give no cellular evidence, (*e.g.*, Nonne's syndromes) of an inflammatory process; and some alteration in the endothelium permitting transudation into the sac, seems better to fit the case.

A reasonable question which might carry a simple explanation of their origin is "Where does the fluid come from in a cul-de-sac to replace that drawn by puncture"? and the only apparent answer is "from the lymph stream", and if so, we have at once a fluid which will show xanthochromia, lymphocytosis and massive coagulation. Normally, the cerebrospinal fluid has been filtered through the choroid plexuses, but here we have the choroid plexus eliminated and the fluid still appearing, hence its altered character.

Summary

1. The syndrome of Froin consists of (a) a spinal fluid of yellow colour (xanthochromia); (b) which coagulates *en masse* and (c) shows an abundant lymphocytosis.

2. The syndrome of Nonne consists of a spinal fluid showing (a) marked increase of globulin, without an increase of cellular elements.

3. The above features may be complete or partial, and variations may exist in the several factors.

4. The syndrome of Froin, or xanthochromia alone, usually

indicates an isolation of one portion of the subarachnoid space from the rest, by tumour, adhesions, etc.

5. This separation is usually found at the lower levels of the cord.

6. Internal hydrocephalus may be associated with separation of the spinal from the cerebral subarachnoid space either by adhesions of the brain stem to the tentorium, or by hernia of the distended brain into the foramen magnum.

7. In the case here reported the possible explanation is, (1) Basal meningitis (meningoccus or B. Influenza). (2) Partial recovery. (3) Obstruction of foramina in the roof of the fourth ventricle by meningitis. (4) Development of a non-communicating hydrocephalus. (5) Hernia of the brain into the foramen magnum. (6) Separation and sacculation of the spinal subarachnoid space. Development of partial Froin's syndrome.

8. A possible explanation of Froin's syndrome lies in the separation of the sacculated portion of the subarachnoid space from the choroid plexus through which normally it is filtered and a reversion of its contents to a simple lymphoid material—yellowish, coagulating and cellular.

A VISIT to the Ontario Hospital exhibit in the Government Building at the recent fair was both instructive and illuminating. Here one learned that the province is maintaining ten mental hospitals for the treatment of those who are mentally afflicted. In each hospital is established a training school for training nurses especially adapted for the care of such patients, and each hospital is furnished with the most complete surgical, electrical, laboratory, and other equipment. Probably one of the most important features of the treatment consists in the occupational therapy or vocational training. For this purpose a trained staff is maintained in each hospital to develop the failing interest of the diseased mind. An interesting exhibit of the patients' work, basket-making, wood-carving, weaving, fancy work and many other useful arts was shown and excited great interest. The well-known fact is recognized that the mind that is unoccupied deteriorates, and because of this all sorts of occupation are provided, the best teachers are procured, and every encouragement is given to these afflicted ones in order that their lives may be brightened, and that they may be enabled to again take their places in society.

STATE MEDICINE AND REHABILITATION

By Lieutenant-Colonel J. L. Biggar, C.A.M.C.

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THE experiences of the last five years have strongly emphasized an aspect of human affairs which essentially pertains to medicine, but has heretofore been given infinitely less consideration than it deserves. The economic effect of illness and injury which surely should form a part of medical knowledge has been left entirely to the sociologist and to those occupied in the administration of charities.

As a result of the large number of war-disabled men for whom the State has assumed responsibility, the problem of the economic restoration of the unfit has assumed a real prominence. Attention has been drawn to the necessity for its immediate solution and specific inquiries have resulted in making generally known the efforts of other countries in this direction. The extent of the communal duty in regard to the physically handicapped has begun to be estimated.

An analysis of the figures regarding the number of men rejected by the recruiting agencies demonstrates the fact that the situation in Canada to-day does demand attention. There has been a rude awakening from the complacent fallacy that the proportion of the unfit to the general population is negligible. The most authoritative information goes to show that one man in every four of those of military age was found to be incapable of active service because of physical unfitness, and that this, in the majority of instances, was the result of preventible disease.

Thus not only has the necessity for the observance of the strictest regulations of preventive medicine been brought most conspicuously to public attention, but it has also been realized that if the standard of national well-being is to be maintained at the highest possible level, economic measures should in addition be undertaken by which there will be provided suitable compensation for physical handicaps.

For of all the sources of illness one factor alone has a vastly

greater causative influence than all the rest combined. Poverty is a condition almost synonymous with ill-health. Though wealth does not spell health, a lack of the means necessary to provide fresh air, good food, and proper relaxation cannot but be the essential predisposing factor in the origination of the majority of the ills to which flesh is heir.

Probably at no time in the history of the world have the resources of medical science been more freely placed at the disposal of those who were willing frankly to admit their inability to pay; and the advantage of this situation has no doubt frequently been taken by those who preferred to save their money at the expense of their honesty. But the large class of poorer citizens who are reluctant either to be classed as paupers or to accept service for which they cannot return fair payment, has obtained less than its requirements of medical attention, and from its ranks are recruited the unfit who can succeed to-day only if they have the luck to find suitable occupations. Also the unhappy fact should not be forgotten that the poor man is haunted all his days by the spectre of the want which in his circumstances must inevitably follow serious illness.

Former wars have alway been followed by a train of dependent cripples, the majority of whom lived out miserable lives dependent upon an insufficient pension supplemented by charity. To prevent a recurrence of this unhappy spectacle, every country has committed itself to extensive schemes calculcated to provide for the economic restoration of the unfit. Essentially the undertaking consists in the provision of free medical treatment, including not only the physiological cure of the patient but also his functional re-education, and of vocational training for those who find themselves unable to return to their previous occupations. The State efforts have so far proved most successful and these measures have, as was clearly foreseen, vastly outweighed in beneficial effect a most generous system of pensions. The latter, however, has its place, and though of less importance, is an integral part of any plan of rehabilitation.

There seems to be no valid reason why these advantages, now being provided at public expense for a small class of citizens, should not be made available to all Canadians who would find in them benefits they cannot now in any way compass. By a system of State Insurance the necessary funds could be obtained, and if, as is done elsewhere, a tax in the shape of a stamp is made on each payment of wages or salary, those people would be paying by whom the benefits are most required.

The governmental machinery is already in operation. A State medical service is to-day providing treatment for many thousands of ex-service men, discharged, disabled or diseased, to civil life. They are housed, fed and paid during their treatment, which is extended to include the re-education of lost or damaged function and the provision of any necessary artificial appliance. In addition to this, thousands are receiving thorough training in occupations in which their disabilities produce the least possible handicap; and finally, on the completion of their courses, they are being found positions in which they can, with the aid of a scientifically estimated pension, regain and maintain their economic independence.

To make these advantages available to every citizen, all that is necessary to do is to increase the scope of the State effort. Those who are not by reason of their war service already entitled to its benefits should be made to contribute to its cost.

The organization of a Department of Health by the Dominion Parliament is a step towards the unification and co-ordination of the public health measures of the provinces. An impetus will be given to the study of preventive medicine in the medical schools. A very great increase in the number of men who practise medicine in the State service must inevitably result from the co-ordination of the activities of the Dominion and Provincial Departments of Health with those of the Department of Soldiers' Civil Re-establishment. The Board of Pension Commissioners has educated a body of men to look upon disease and disablement from its economic rather than from its pathological aspect. This phase of medicine is practically *terra incognita* to the graduate of the medical schools and very rarely do his later experiences tend to increase his knowledge of its topography.

The hospital service, vocational schools and employment bureaux of the Department of Soldiers' Civil Re-establishment, and the organization of the Board of Pension Commissioners might, without any material modifications of the principles upon which their activities are based, be made available to any Canadian citizen who would be benefitted by the advantages they have to offer. By his benefit the State would in the last analysis be the gainer.

The opportunity is at hand. The duty seems clear. The advantages are incalculable. The cost need not be prohibitive. Should we not then, as a profession, urge these measures upon the Government of this country?

A REPORT ON THE COMPARISON OF KOLMER'S MODIFICATION OF THE ORIGINAL WASSERMANN TEST AND NO. 4 METHOD AS RECOMMENDED BY THE MEDICAL RESEARCH COMMITTEE

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AND

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IN the following paper we give a concise summary of our results from a reading of the Wassermann tests performed in this hospital within the last two months. These tests were carried out simultaneously. The first is that described by Kolmer in his No. 1 method (original Wassermann reaction), except that only a quarter of the amounts were used throughout, and a ten-day cholesterinized alcoholic extract of human heart is used instead of an alcoholic extract of syphilitic liver; this is Major F. B. Bowman's modification, used successfully at No. 1 Canadian General Laboratory, Folkestone, over a long period. The second is the method recommended by the Medical Research Committee in their No. 1 interim report on the Wassermann test, namely, No. 4 method. Before this report was published, we had been using only the former test; technique is simple and the quantities used are small, so that much economy resulted from employment.

To make our readings of No. 4 method conform with those by Kolmer's method (in which only one tube is used), we have employed the following scale of signs for both:

(*a*) Complete inhibition of haemolysis (no tinge of haemoglobin in the fluid around or above the cells) in the front and second row tube = + + +

(*b*) Complete inhibition in the front row tube, some opacity in the second row tube, but also some haemolysis = + +

(*c*) Complete inhibition in the front row tube, but complete haemolysis in the second row tube = +

(*d*) Slight haemolysis in the front row tube = ±

One hundred and seventeen sera in all were tested in this comparison. As stated above, the two tests being performed side by side, we were able to use the same gross complement, amboceptor and washed sheep's corpuscles; all sera were inactivated at the same time and the tests performed under similar conditions of temperature and pressure, in this way eliminating sources of error as much as possible. Ninety sera gave negative reactions with both methods. Twenty sera gave a strongly positive reaction, *i.e.*, complete inhibition of hæmolysis with clear supernatant fluid in both tests, and here in no case did a serum give a strongly positive reaction with Kolmer's method, and not so in the test as described in No. 4 standard method. In only one case was a serum slightly positive or doubtful in one and negative in the other.

In no case was there marked divergence in the results; in only four out of one hundred and twenty cases was there a slight difference in the readings of the two methods, the difference of one degree in the scale employed (if one may so express it).

The results of the less strongly positive and doubtful reacting sera are given in the following table:

Method	Case A	Case B	Case C	Case D	Case E	Case F	Case G
No. 4 standard....	+ +	+ +	+	+	±	±	±
Kolmer's.....	+	+ +	+	±	±	—	+ +

A synopsis of histories of these seven cases is here given:—

Case "A"—Denies venereal disease. *X*-ray shows periosteal thickening above internal condyle of femur and localized periosteal thickening 8 cm. below external tuberosity of tibia. Wassermann positive + + +, March 8th, 1918. 3·3 gm. of novarsenobillon and 9 gr. of hydrarg. salicylatis administered. Wassermann positive + + +, June 13th, 1918. Treated with pot. iodid. and calomel ung. inunctions for one month. August 13th, 1918, Wassermann test as above.

Case "B"—Contracted syphilis in 1910. Received total of eleven injections of diarsenol and twelve of hydrarg. salicylatis late in disease.

Case "C"—History of exposure to syphilis and chancre in December, 1916. Full course of treatment with diarsenol and mercury.

Case "D"—Contracted syphilis about six months ago and received full course of anti-syphilitic treatment early. Above test

performed September 11th, 1918, following provocative dose of novarsenobillon.

Case "E"—Definite history of syphilis some years ago. Long course of diarsenol treatment in military hospitals.

Case "F"—No history of venereal disease. Patient denies having had a sore, but admits exposure many years ago. At present no definite clinical signs of syphilis. (N.Y.D.)

Case "G"—A most interesting case. No clinical evidence or history of syphilis. Patient suffering from lymphatic leukæmia;* blood picture typical of same. Further investigation is being carried on.

Conclusions

1. It would appear that in long treated cases sera tested by No. 4 method give a more delicate reaction.

2. The varying number of units of complement used in No. 4 method tend to eliminate sources of error by non-specific complement fixation.

3. The reserve complement titration used in No. 4 method is an excellent check on any deterioration of complement occurring due to atmospheric conditions which would otherwise detrimentally affect the test proper.

4. Strongly positive sera do not vary in their reaction with the two methods employed.

Note

In making our readings of No. 4 method, in order to conform with the readings of Kolmer's method, where only one tube is used, we recorded our results as follows:

(*a*) Complete inhibition of hæmolysis (no tinge of hæmoglobin in the fluid around or above the cells) in the front and second row tube, + + +

(*b*) Complete inhibition in the front row tube, some opacity in the second row tube, but also some hæmolysis, + +

(*c*) Complete inhibition in the front row tube, but complete hæmolysis in the second row tube, +

(*d*) Slight hæmolysis in the front row tube, ±

* To our knowledge lymphatic leukæmia is not one of the conditions that is recognized as affording a positive Wassermann reaction.

Case Reports

RUPTURE OF LEFT CARDIAC VENTRICLE

By Giles B. Murphy, B.A., M.D., C.M.

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SPONTANEOUS rupture of the heart is a condition met with in certain organic diseases of the myocardium, but on account of its rather infrequent occurrence, a detailed history of the following case may prove of some interest.

The patient was a Methodist minister, aged fifty-eight years, of robust appearance, five feet nine inches tall and weighing one hundred and seventy-three pounds.

Complaints. Indefinite pain in stomach and across lower part of back.

Personal history. Always a healthy man; had measles at age of five years. Broken leg some years ago. Had a fainting attack sixteen years ago following rather vigorous exertion, but never any recurrence of such afterwards. No rheumatic history.

Family history. Father died aged sixty-five years of "creeping paralysis". Mother died aged eighty-seven and a half years, suddenly. One brother died aged sixty-two years, who had been a heavy smoker and had had heart trouble for some years. A very heavy man weighing upwards of two hundred and forty pounds. Two brothers living and well. Two sisters living, one affected with "nervous trouble".

History of present illness. Two days prior to consulting me (July 16th) patient stated he had eaten rather liberally of some fresh green peas, of which he was very fond. He attributed the gastric pain to this indiscretion. He had not had any nausea or vomiting; appetite was good and bowels regular every day. There had been no diarrhœa. As nothing of a definite nature was made out on examination, he was given calomel and told to keep quiet and restrict his food to a light diet.

Progress of case, July 17th. Slept comfortably during night; complains of pain across small of back. Temperature 100°, pulse 72. Patient states he feels very weary and languid. Examination

revealed a coated tongue and foul breath. The pulse was regular, heart showed some slight left-sided enlargement, slightly beyond nipple line. Heart sounds clear and distinct and there were no murmurs discoverable. Blood pressure was not taken, but judging from pulse tension, could not have been beyond 140 systolic. Arteries not visibly or palpably thickened. There was some slight abdominal distention and perceptible stiffness of the right rectus muscle but absolutely no tenderness. Liver not enlarged, no œdema of extremities, both lungs clear. As the bowels had not moved, he was ordered more calomel, followed by Epsom salts. A liquid diet was also ordered and absolute rest in bed. Urinalysis showed no abnormality beyond a few red blood cells present.

July 18th. Slept well; complains of pain (slight) across small of back. Bowels had been freely moved and he stated he felt much better. Another careful examination revealed no new developments. Temperature 97°, pulse 78. Heart as at previous examination. There was no dyspnœa present.

July 19th. Slept well and remarked on how very much improved he felt. Temperature 99°, pulse 88, soft, regular and of good volume. Heart sounds clear. Abdominal stiffness still present. The skin very moist. Urine showed a well marked albumin reaction. He remarked that as he felt so much improved, he would like to get up out of bed. Against my advice, about 2 p.m. he had a warm tub bath and went back to bed feeling refreshed. An hour afterwards he complained of twinges of pain over the lower part of his chest in front which disappeared in half an hour after applying a hot water bottle. He read the evening newspaper aloud to his wife about 6 p.m., and at 7 p.m. called for his son to come up. Nothing unusual was noticed about his condition, but in a minute or two he convulsively seized his præcordial region and expired.

Autopsy, July 20th. Having only secured permission for a partial autopsy, the chest only was explored in the usual way. There was a marked amount of subcutaneous fat present. The lungs appeared pale and partially collapsed. The pericardium was not distended visibly and showed nothing unusual. On opening the pericardial sac, however, a large quantity of bloody fluid escaped and before the heart could be reached, a clot the size of the double hands was removed. On lifting up the heart the aorta and other great vessels were felt to be collapsed and their walls flattened together. On removal of the heart there was still left in the pericardial sac a clot which at least would easily have filled a pint

measure. Examination of the heart revealed a rather more than usual amount of subpericardial fat. The heart muscle was very pale and flabby and the organ somewhat contracted. On the most prominent curve anteriorly, of the left ventricle, was a vertical tear in the muscle wall about one and a quarter inches long, and about one inch from the interventricular septum. The edges of this tear were deeply blood-stained, and the surrounding tissue darkened. A probe passed easily through the whole extent of the tear into the left ventricle. On opening the heart, nothing abnormal was found in the right auricle or ventricle. Both chambers were empty of blood. The left auricle was also empty and healthy. There were a few small clots behind the cusps of the mitral valve. The left ventricle was markedly hypertrophied ($2\frac{1}{2}$ cm.), very pale and extremely friable. The muscle was not thinned out in the region of the tear. The rupture was of equal extent on the inner aspect of the ventricular wall. The ventricle was also empty of blood. The aortic valves showed sclerosis at the base of the cusps and there were other atheromatous patches in the root of the aorta. The coronaries also showed sclerosis but no thrombosis or embolism.

Under the nomenclature of "Rupture of the Heart", Osler speaks of the condition as being a rare event, usually associated with fatty infiltration or degeneration. Quain collected one hundred such cases, in which fatty degeneration was noted in seventy-seven. The preponderance of cases appeared in patients over sixty years of age, though it has been known to occur in infants from embolic infarct of the left ventricle. The above case is unusual in that it occurred during absolute rest in bed and not during exertion, as so frequently happened in the recorded cases. Neither was the patient distressed with severe præcordial pain except as a terminal event at the instant of rupture.

This would, therefore, appear to be one of the cases which may be grouped as a myocardial disease in which sudden death occurred without previous evidence or indication of any heart affection. The myocardial degeneration was evidently of the fatty type. As Osler states, "Many patients never complain of cardiac distress, but as in the case of Chalmers, the celebrated Scottish divine, enjoy unusual vigour of mind and body."

I have to thank Dr. Walter S. Baird, of Vancouver, for his assistance at autopsy and confirmation of the findings.

Editorial

EPIDEMIOLOGY AND RECENT EPIDEMICS

IN the presidential address to the tenth congress of American Physicians and Surgeons, Flexner reviews our knowledge of the three great epidemic diseases—poliomyelitis, streptococcus pneumonia, and influenza—which have been the cause of such extensive ravages on this continent during the past three years.

Poliomyelitis. Prior to 1907 this malady was of rare occurrence in the United States. Since then there have been extensive outbreaks in the summer and autumn and in at least one instance in winter; in 1916 an epidemic of unprecedented severity broke out in New York and extended to a number of other states.

The inciting micro-organism has been found chiefly in the naso-pharnynx and reaches the corresponding mucous membrane of uninfected individuals, and no evidence exists that it is conveyed in any other way.

Streptococcus Pneumonia. This disease appears almost, if not quite, new among the epidemic diseases. It appeared in 1917–1918, chiefly in military camps in the United States and to a less extent in France; at first following measles and later as a primary pneumonia which extended to the civil population. Numerous studies of the bacteriology showed almost invariably the presence of streptococcus hæmolyticus. The virulence of this organism is developed in transfer from person to person and it is conveyed from the respiratory tract of one individual to another, and in no other way.

Influenza. Although differences of opinion exist as to the nature of the causal micro-organism, there is no doubt

that the spread of the disease is exclusively through human carriers. The malady travels at the same rate as the existing means of intercommunication, whether this be a caravan in the East, an ocean liner or an express train.

Protection from these three great forms of respiratory infection can only be obtained by methods of personal hygiene designed in protecting one individual from another, but the difficulty of enforcing any such regulations is obvious.

In poliomyelitis and influenza a constantly increasing number of individuals become infected before any preventive sanitary regulations are put in force. By the time that such regulations become operative the epidemics have passed beyond control. Recognition and isolation of the early cases, which invariably precede an epidemic in both these diseases, would appear to be highly desirable, although the mild and ambulatory cases must always prove difficult to control as centres of infection.

In the epidemic pneumonias the infectious agents exist in the buccal, nasal and bronchial mucosæ, and are disseminated in the sprayed material thrown off by coughing and otherwise. These organisms exist normally in the sites referred to and their pathogenic characters in epidemics represent intensified forms of sporadic diseases ordinarily prevailing.

The lesson derived from the experience of the recent epidemic is to isolate patients in separate wards or cubicles and so avoid infection of neighbouring cases.

The possibility of eradicating endemic foci of these diseases is briefly discussed. In the case of yellow fever success was attained by attacking the malady at its source and not after it had spread to widely separated areas. Whether such a method of eradication is practicable in the present state of our knowledge is somewhat doubtful, but at least we must recognize its possibility. Poliomyelitis is endemic in northwestern Europe and influenza appears to have its home and to originate in the region between Russia and Turkestan.

Efforts at control, prolonged continuously over a long period, offer a hope that the breeding areas of these diseases may be ultimately destroyed.

ON DIET AND NUTRITION

NEVER before have the nutritive needs of man been so critically considered as they have been during the past few years. Proteins, fats and carbohydrates have been carefully estimated in terms of calories with profound regard for economy of consumption and the prevention of unnecessary waste. Victory was unquestionably secured, not only by our armies in the field, but by the scientific assistance given to those in charge of the food supplies in England and France by the British and American physiologists.

But long before the war the amount of the several elements of food necessary for perfect nutrition of the body was a matter of careful investigation by physiologists. Twenty years ago Chittenden announced the possibilities of a low protein diet in securing what he deemed to be perfect nutrition; but his experiments lasted only a few months, and his results were questioned at the time. Nevertheless the necessities of thousands during the late war who were compelled to live on the scantiest of rations in a measure verified his statements, and indicated a surprising power of adjustment of the metabolism of the human organism to lessened supplies. Nutrition under such circumstances, however, must be impaired, and may manifest itself in a lessened power of resisting infection.

In a recently issued report, the Food Committee of the Royal Society of London maintains that the protein in the diet of an average man cannot without detriment fall below 70 or 80 gms. per day, and recommends that it should be obtained from a mixed diet, and should always include a certain amount of protein of animal origin.

In a small volume on "The newer Knowledge of Nu-

trition", Professor E. V. McCollum of Johns Hopkins University, strikes a new note and calls attention to the results of experiments with animals indicating that the mere estimation of the number of calories in the daily supply of food does not afford a perfect presentation of the value of a diet in supporting nutrition. It has been thought in the past that freedom of choice, and a variety of food sources would prevent any faults in the dietary becoming serious. This must now be recognized as a mistake, especially as we have to admit the existence of many degrees of gradation in malnutrition not recognizable in their effects on the individual, unless the causes act over an extended period of time. It seems now to be certain that pellagra is a sequel to the adherence to a faulty dietary for such a period of time as to materially reduce the power of resistance to infection. There is also some reason to believe that pellagra is caused by an infection; thus establishing a close relationship between the character of a diet and the activity of an infection. McCollum suggests the possibility that a defective diet may have a closer relationship than has been suspected with the development of tuberculosis and other similar infections. A striking illustration of such a relationship is found in the tendency to the development of xerophthalmia when the fat soluble vitamin principle is missing from the diet. Apparently even bacteria require some vitamin principles to facilitate their development; principles which act in very small amount and are not by themselves able to support growth. Lloyd in England has called attention to the rôle of these vitamins in the growth of the meningococcus, stating that the primary cultivation of this micro-organism is possible only in presence of certain growth factors present in blood serum and milk and perhaps present in some vegetable tissues. Davis, in the *Journal of Infectious Diseases*, has also offered evidence that vitamins are essential to bacterial growth and nutritition. How these vitamins act is at present quite obscure, as is the answer to the question of their chemical nature.

The very carefully conducted investigations of McCollum have led to the definite statement that nutrition fails, and child life is liable to perish unless a dietary contains the vitamin principles which have been termed the fat soluble A, and the water soluble B principles. These stimulate growth and well being probably by initiating and co-ordinating the protoplasmic formative reactions among the essential elements prepared by the digestive processes. The best sources of fat soluble A are whole milk, butter fat, and egg-yolk. It is not found in any fats or oils of vegetable origin.

The water soluble B is never associated with fats or oils of either animal or vegetable origin. It is widely distributed in natural foods, and according to McCollum can be isolated in a concentrated but not in a pure form from these by extraction with either water or alcohol. The watery or alcoholic extract always contains the principle which cures polyneuritis.

It is evident that the older practice of regarding protein, carbohydrates and fat in calories as the criterion of the value of a food mixture must be replaced by or associated with a new biological classification of food stuffs based upon function performed as well as energy supplied.

CHANGE IN THE LAWS REGARDING PATENT MEDICINES

AT the last Session of Parliament, an Act was passed to amend the Proprietary or Patent Medicine Act previously in force, in the following particulars, which may have an interest to our readers. Hereafter every patent or proprietary medicine imported into or offered for sale in Canada must have a numbered certificate of registration from the Minister of the Crown in Ottawa charged with the administration of this Act.

Any patent medicine containing any drug mentioned in

the schedule of drugs having an injurious or poisonous action must have a sworn certificate accompanying the application, stating the amounts of such drug or drugs in the medicine.

Whenever required by the Minister, for good cause the preparation of any medicine containing one or more of such scheduled drugs shall be continuously supervised by a pharmacist or chemist. The manufacture, importation and sale of all proprietary or patent medicines containing opium or its derivatives for internal use are prohibited.

No proprietary or patent medicine shall be manufactured, imported, exposed or offered for sale or sold in Canada; (a) if it contains cocaine or any of its salts or preparations; (b) if it contains alcohol in excess of the amount required as a solvent or preservative, or is not sufficiently medicated to make it unfit for use as a beverage; (c) if it contains any drug which is included in the schedule to this Act the name of which and the amount per dose of which are not conspicuously printed on an inseparable part of the label and wrapper of the bottle, box or other container, or if the quantity of such drug exceeds the amount permitted by the Advisory Board; (d) if it contains any drug which is included in the schedule to this Act and the name of such drug as used on the label be not the commonly employed name of such drug; (e) if the article be represented as a *cure* for any disease; (f) if any false, misleading or exaggerated claims be made on the wrapper or label, or in any advertisement of the article. No proprietary or patent medicine intended for administration to infants under one year of age shall contain any derivative of coal-tar, which in the opinion of the Advisory Board is dangerous to children under one year of age.

Heavy penalties are attached to any infringement of this Act, which penalties shall be deemed to be in addition to and not in substitution for any penalties incurred under the laws of any province.

ON SCIENTIFIC RESEARCH

TWO papers dealing with the necessity for state endowment of scientific research in Canada have been received by us. One by Dr. A. B. Macallum, chairman of the Council for Scientific Research, and the second by Dr. F. D. Adams, dean of the Faculty of Applied Science at McGill. The profession in Canada, will, we are convinced, agree with all Dr. Macallum says in reference to the importance of such action by the Government. "In all the natural advantages for industrial supremacy Canada is in an enviable position as compared with our trade competitors. But in regard to the vital question of the scientific organization of our industrial processes, of finding new uses and new markets for our raw materials, and of conserving the by-products of our manufactures, we are a long way behind our neighbours." It is proposed to establish a Central Research Institute at Ottawa which will combine the function of the Bureau of Standards at Washington and of the Mellon Institute at Pittsburgh. The establishment of such an institute is the first step towards placing industrial research work in Canada upon an adequate and permanent basis, enabling the Dominion to keep abreast of similar progressive methods in other countries. A further necessary step will be the working out of the Council's plans to secure adequate provision by the universities for the training of scientific workers. This training demands inspiring teachers. If we had the funds, we believe there are many such in every Canadian university.

TORONTO'S medical health officer is reported to have stated recently that practically every city is still experimenting with methods of sewage disposal and that none have yet been able to solve the problem satisfactorily. His remarks are another reminder that there should be some central

bureau, or laboratory, fully equipped with funds and staff for conducting experiments in public sanitation. All problems of general application could then be referred to that bureau and be properly taken care of, leaving only purely local problems to be solved by the individual municipalities.

England's School Medical Service during the past ten years presents a most profitable subject for study to those interested in establishing national standards of health. In this country, where only a beginning has been made with the medical inspection and treatment of school children, parents, teachers, the medical profession and organizations for social service can have no better lesson brought to their attention than England's example. The following report has been taken from a school medical service:

That every child shall periodically come under direct medical and dental supervision, and if found defective, shall be "followed up".

That every child found malnourished shall, somehow or other, be nourished, and every child found verminous shall, somehow or other, be cleansed.

That for every sick, diseased, or defective child, skilled medical treatment shall be made available, either by the local education authority or otherwise.

That every child shall be educated in a well-ventilated school room or class-room, or in some form of open-air school-room or class-room.

That every child shall have daily, organized physical exercise of appropriate character.

That no child of school age shall be employed for profit except under approved conditions.

That the school environment and the means of education shall be such as can in no case exert unfavourable or injurious influences upon the health, growth and development of the child.

Correspondence

To the Editor:

Dr. A. B. Macallum's letter in your September issue of the JOURNAL regarding the prevalence of syphilis is to my mind timely. The disease is such a grave one that its prevalence and the danger from it should be fully realized by the public generally. This, however, does not justify exaggeration as to its frequency, as doing so brings discredit to the country and its people. There has been no investigation as to its frequency, so that the statements made that there are half a million cases in Canada—one in every sixteen persons—has no justification in fact. The estimate of its prevalence in Great Britain shocked the public. By the thinking people it was regarded as impossible, and it was admitted by the authors of the report to be an exaggeration, and yet their est mate was only half a million in a population fully six times that of Canada.

In the London *Lancet* (July 26th, 1919, page 172) is a statement as to the prevalence of venereal diseases in Victoria, Australia, for 1918, as determined by compulsory registration of all cases, the population of the province being 1,250,000. There were registered in all 6,790; of these were 4,878 cases of gonorrhœa, and 1,686 of syphilis; in addition there were 99 cases in which both diseases existed. This is a trifle less than one of syphilis to seven hundred of the population. Doubtless many cases escaped registration, but these would be chiefly of the well-to-do rather than of the lower classes, especially foreigners, the class in which by far the greater number of the infected persons in Canada have been found. It is no doubt this latter class, seen in our out-patient clinics, which forms the basis of the enormous estimate of cases in Canada. It is further to be noted that in Victoria there were three times as many cases of gonorrhœa as of syphilis, and the former would quite as probably escape notification as the latter. It is not unreasonable to suppose that a similar ratio prevails between the two diseases in Canada. If that is true and the estimate of half a million cases of syphilis in Canada is accepted, there would then be one and a half million cases of gonorrhœa, making a

total of two million cases of venereal disease; that is, one in every four persons in this country is infected with one or the other disease. This conclusion is no more preposterous than that there are half a million syphilitics in Canada.

This is not a protest against the effort to rouse the public to an appreciation of the danger from this disease, far from it. If there are even 50,000, or more likely only a fraction of that number, the safety of the population of this country calls for drastic action to meet the menace, a greater one than that from even typhoid fever or small-pox, has ever been. Gross exaggeration once discovered, will defeat the object aimed at, as the public will attribute the crusade to ignorance or ulterior motives, and lose faith in any statements however truthful which may in future be made. The doctrine that "the end justifies the means" is dangerous doctrine and may in the end nullify its own aims. It is of vital moment to prosecute a vigorous campaign against venereal diseases which must not be allowed to become a menace to our Canadian homes. This is the crux of the whole matter. There is no need to exaggerate the number of cases in order to appreciate the menace of these diseases to the population of a country hard hit by war which produces a large population of soldiers who, if properly cared for, will be capable of supporting large families who will become our most desirable citizens.

151 Bloor St. W.
Toronto.

Alexander McPhedran.

Obituary

ARCHIBALD EDWARD MALLOCH, M.D.

Archibald Edward Malloch, M.D., died in Hamilton on August 6th. He had been in declining health for some time, suffering from the effects of a slight sunstroke on the golf-links a year ago, but despite occasional relapses, hopes were held out that he might be spared for some years. In his death the community sustain the loss of one of its most distinguished citizens.

Dr. Malloch was born in Brockville, Ontario, seventy-five years ago. He was the youngest son of the late Judge Malloch of that town. He graduated in Arts in Queen's University, Kingston, and took his medical course in the University of Glasgow, Scotland. He had a distinguished career in both Universities. Even as a student he attracted the attention of his teacher, Joseph Lister, then professor of surgery at Glasgow University. In 1868 Lister chose him for his house-surgeon. Dr. Malloch was thus present at the birth of antiseptic treatment, and when he returned to Canada, brought with him a practical knowledge of its principles that made him one of its early pioneers on this continent. Dr. Malloch filled the chair of anatomy at Toronto University in 1870–1, and a year later settled in Hamilton, beginning the practice of medicine and surgery in partnership with the late Dr. McDonald.

When fifty-four years of age, Dr. Malloch gave up surgery and limited his activities to a consulting practice until about ten years ago when he retired.

Dr. Malloch did very little writing, and in consequence was less known as an authority than his ability entitled him to be. He was distinguished for the readiness with which he lent his abilities to the younger members of the profession, placing his knowledge and talents at their disposal whenever the occasion offered. Dr. Malloch was more than an able physician and surgeon, he was a citizen of broad mind and lofty character, a leader, not only in his profession, but in social life, and public thought. His death removes one of the strong men of former years, whose professional skill and integrity won more than a local reputation.

Dr. Malloch was the father of Dr. Archibald R. Malloch, who did such excellent work at La Panne and No. 3 Canadian General Hospitals and who is the author of the scholarly monograph on *Finch and Baines* reviewed in this Journal.

DR. ROBERT HANLEY

General and sincere regret was felt among all classes in Kingston at the death of Dr. Robert Hanley, at the Hotel Dieu, on September 18th. Dr. Hanley was born in Kingston and spent his life in that city. He graduated from Queen's University with the degree of M.D. in 1898. For eight years he represented St. Lawrence Ward in the City Council. He was a member of numerous societies and for the last four years held the position of surgeon at the Portsmouth Penitentiary. He will be greatly missed, for his broad sympathies extended his activities in all directions, and his unfailing courtesy made him a universal favourite.

DR. MAURICE J. VIGNEUX

Dr. Maurice Vigneux, a well-known physician of Nelson, British Columbia, was accidentally drowned in the lake at Connaught Park on August 22nd in an attempt to rescue a little girl who had fallen into the lake. He had only recently returned from overseas, where he had served in France for eighteen months, and at the time of his death was in charge of the internment camp at Fernie.

DR. ROBERT SLOAN

Word has been received of the death, in China, of Dr. Robert Sloan, father of Hon. William Sloan, minister of mines for British Columbia. Dr. Sloan went to Japan in 1869, and, on the recommendation of Sir Henry Parkes accompanied Prince Iwakura, the first Japanese embassy, to England. In 1877 he returned to China and settled in Shanghai where he secured a large practice and was much respected.

DR. CHARLES EDWARD BERKLEY DUNCOMBE

Dr. Charles Edward Berkley Duncombe, one of the best known professional men in St. Thomas, was severely injured in a collision between two motor cars, on September 14th, and died on his way to the hospital. The accident happened about five miles from Brantford.

Dr. Duncombe had practised for over thirty years in St. Thomas. He was a son of Mr. Daniel Duncombe, who represented Norfolk county in parliament for twelve years. He was a past president of the St. Thomas Medical Association.

Dr. William Kayler died on September 19th, in Toronto, where he had been practising for eighteen years. He was a graduate of Queen's University.

Dr. Ivan Dwight Hayes died in Toronto recently of heart disease, aggravated by war service. He was thirty-four, a graduate of the University of Toronto. At the first request of the British authorities for medical officers Dr. Hayes offered himself and was given a commission, and went to France. The following year he was invalided home and was appointed medical officer to the Royal Flying Corps, but ill health again intervened. He recovered sufficiently to resume private practice until his death recently.

Miscellany

News

QUEBEC

Dr. J. U. Archambault was elected president of the Quebec Health Service Congress at its closing session. Dr. Edmond Savard, M.P., of Chicoutimi, was elected vice-president, Dr. de Varennes, of Quebec, secretary, and Dr. Delisle, of Chicoutimi, assistant secretary. The medical health officer of the city of Quebec expressed himself as being strongly in favour of the organization of municipal health boards throughout the province. After his return from the Congress he stated that in the province of Quebec there are no less than twelve hundred municipalities that should have a board of health which should be supported by the municipality, and that the attendance of the health officer of that board should be required at every annual convention.

The Quebec Board of Health issued an announcement prior to

the opening of the schools that all prospective scholars would be required to present a certificate of vaccination. The Montreal Health Department alone had between seven and eight hundred children daily vaccinated in the City Hall Annex building. In addition to the six doctors who were continuously engaged in the work, many others were distributed throughout the city.

Printed circulars, in both languages, on the medical inspection of schools have been issued by the Health Department. The circular is signed by the superintendent of the division of child hygiene and begins by showing the necessity of inspection, and the desirability of the co-operation of the school teachers to render the work efficient. It explains the duties of the medical inspector and those of the nurse. The circular estimates that the number of children in Montreal, including infants, is about 200,000.

At a meeting of the Canadian Club in Montreal, Major George C. McDonald announced that a movement had been inaugurated by the Guelph Canadian Club to start a subscription for a memorial to Lieutenant-Colonel John McCrae, M.D., the author of "In Flanders' Fields"; the memorial to be placed either in France or in Guelph, the dead poet's home. Major McDonald said that already $15,000 had been secured in dollar subscriptions from various Canadian clubs and Mr. W. A. Higginbotham had been appointed to receive such subscriptions in Montreal.

The Public Health Services convention, which was held recently in Hull, was largely attended by medical men; the sessions continued two days. Those in the morning were private, but medical men and the public were cordially invited to the afternoon and evening sessions. The address of welcome was given by Mayor Archambault, who is himself a physician and vice-president of the convention. Dr. Valin, of Laval University, Montreal, spoke on Water Filtration, illustrating his talk with lantern slides. A most interesting address was given by Dr. C. V. Chapin, professor at Harvard University and health officer of the city of Providence, Rhode Island. On the closing day Dr. J. A. Amyot, deputy minister of the Dominion department of Public Health, discussed the functions of the newly created department.

ONTARIO

The annual meeting of Leeds and Grenville Medical Association was held at Prescott, September 19th, between forty

and fifty members being present from the neighbouring counties. Gananoque, Brockville, Kemptville, Lyn, Spencerville and other points were represented. The officers elected for the ensuing year follow: President, Dr. Storey, Kemptville; vice-president, Dr. C. H. Bird; Gananoque, secretary-treasurer, Dr. Gordon, Kemptville. Papers and short addresses were given by medical men present.

St. Luke's Hospital, Ottawa, shares an exceedingly generous bequest with Bootle Hospital, at Bootle, England. By the will of the late Robert Montgomery Cox, Ottawa, one-half of the total residue of the estate is to be given to each of the above mentioned hospitals. The total estate amounts to $1,790,543.85, of which amount about $400,000 is comprised in various bequests, legacies and annuities, and after these have been discharged and provided for the gifts to the two institutions will be about half a million dollars each. Lady Grey Hospital, Ottawa, receives a legacy of five hundred pounds sterling.

A representative meeting of the medical men of the counties of Peterboro, Victoria, Durham, Hastings, Northumberland, Prince Edward, Lennox and Addington, took place on September 18th, at Belleville. Numerous papers were read. Among others was an excellent one on "Pelvic Inflammation" by the President of the Ontario Medical Association.

The Muskoka District Medical Association met at Gravenhurst. Dr. Parfitt was elected president and Dr. Kimball secretary of the Association. Dr. J. W. Hart, of Huntsville, was elected a member of the executive committee. The physicians at the Sanatarium gave an *X*-ray demonstration of the latest oxygen treatment for tuberculous infection which has proved very successful.

The reports of communicable diseases, sent in by the local boards of health for the month of August, indicate that the health of the province may be considered very satisfactory. The decrease in cases is over 550. In August, 1918, there were 1,331 cases while there were only 780 in the same month this year. The most marked reductions were in typhoid fever, measles and whooping cough. In August, 1918, there were 833 such cases, and in August, 1919, only 245. The number of deaths from all diseases

shows an increase of sixty, but fifty-nine of these were due to diseases not reported last year. Tuberculosis showed a decrease from 206 to 176 cases reported and a decrease of from 116 to 109 in deaths. Smallpox shows an increase of from twenty-one to thirty cases, but there were no deaths. The decrease in the cases of syphilis, gonorrhœa and chancroid is 119, there being 337 cases in August, 1918, and 278 this August.

Dr. Horace L. Brittain has resigned the superintendency of the Toronto General Hospital. Sincere appreciation of his services were expressed by the hospital trustees.

The appointment of Dr. J. C. Fitzgerald, as professor of hygiene in place of Dr. Amyot, has been confirmed by the Board of Governors of the University. Formerly an associate professor in this department, Dr. Fitzgerald is also head of the Connaught Laboratories, and he will combine the two offices.

NEW BRUNSWICK

The Department of Health of New Brunswick is gradually getting into complete organization. With the exception of one county, the whole province is now under the immediate jurisdiction of sub-district Boards of Health. These number fifteen in all, and each has a permanent staff with all the members paid regular salaries, adequate to the location and work to be done. The work of these Boards is supervised by their District Medical Health Officers, each having charge of a section of the province known as the eastern, southern, and western health districts. During the short time (since about March or April at most) these boards and officials have been in office, and have been doing satisfactory work which will improve in character as they become more accustomed to the situation.

Over the whole province, with the one exception noted above, a system of medical examination of schools has been put into operation. There are nearly one hundred medical men engaged in this work, every one of whom is paid a definite yearly salary; the old vicious and extravagant principle of remuneration by fees, having been entirely eliminated, except in emergencies when the staff requires to be suddenly but only temporarily increased.

In a very little while, what is hoped to be a complete and

efficient system of collection of Vital Statistics will have been put in motion. This service, also, will be altogether under the control of the health authorities, and will be practically administered by employees (paid by salary) of the sub-district Boards. It will be under the general supervision and management of the Chief Medical Officer of the department at Fredericton, who for the time being acts as Registrar General for the province.

Having in view the entirely novel character of these services and the method of administering them, it is gratifying to be able to say that the machinery involved is already working with less friction than could have been reasonably anticipated.

This is largely in consequence of its well-knit construction. The whole administration forms a department of the Provincial Government, with a Minister of that Government at its head, and with a Chief Medical Officer as his executive. Each officer from the top to the bottom is a very distinct and responsible link or part of the whole machine, and, under the laws and regulations, each has his clear duty to perform with no possible doubt as to its nature.

NOVA SCOTIA

The convocation at the celebration of the Centenary of the founding of Dalhousie University for the purpose of conferring the honorary degree of LL.D. took place in the Macdonald Memorial Library of the University on September 11th. There were twenty-three recipients of the degree; but in a few cases the degrees were conferred in absentia.

Two members of the medical profession and one representative of Dentristry received the LL.D., namely: Dr. Murdoch Chisholm, Halifax; Dr. John Stewart, Halifax; Dr. Frank Woodbury, Halifax. In introducing those gentlemen to President MacKenzie, the Dean of the Faculty of Medicine spoke as follows:

Mr. President: The Senate is of the opinion that one of the senior members of our own Faculty of Medicine should be selected to be honoured on this important epoch in the history of the University. I have the honour to present to you for the honorary degree of Doctor of Laws:

Murdoch Chisholm, Doctor of Medicine and Master in Surgery of McGill University, and Licentiate of the Royal College of Physicians of London, one eminently worthy of receiving the highest honour which it is in our power to bestow. There is no

member of the medical profession in all Nova Scotia more respected or more trusted. Although no longer a young man as years are counted, Dr. Chisholm's hand has lost none of its gentle skill, nor has his gentle spirit lost anything of the original freshness in its outlook upon life. Descended from a Highland stock settled near the beautiful sea-lochs of Argyleshire, Dr. Chisholm has inherited not a little of the poetical temperament which is characteristic of the Celt.

As a teacher of clinical surgery, he has few equals; as an examiner in surgery he is eminently fair because so painstaking and sympathetic. Dr. Chisholm is known in other spheres than the medical. As a reverent student of the Holy Scriptures he has made a special study of the problems of prophecy and its interpretation, and within the last year or so has published his views on these recondite subjects."

"Mr. President: I have the honour to present to you for the honorary degree of Doctor of Laws, John Stewart, Bachelor of Medicine and Master in Surgery of the University of Edinburgh, Doctor of Laws of the same University, and Doctor of Laws of McGill University.

Dr. Stewart was born in Nova Scotia; but his ancestral home is in the Braes of Mar, a district in the Highlands of Scotland celebrated alike for its wild beauty and for the devotion of its men to that Royal House which had the distinction to bear the name of Stewart.

Dr. Stewart had the privilege of being associated with the discovery which is one of the greatest glories of purely British achievement, antiseptic surgery, for at Edinburgh University he had Mr. Joseph Lister as his teacher in surgery, and later in London he acted as his resident surgeon, in the wards of King's College Hospital.

So well did Stewart commend himself to Mr., afterwards Sir Joseph, and later Baron Lister, that he was pressed to accompany his master to London, where, with such an introduction to the capital, wealth, honours, and all that is meant by professional success were abundantly assured to him.

But Mr. Stewart decided otherwise; returning to this country he practised his profession for many years in the town of Pictou, and found himself in constant demand throughout all Nova Scotia as a consultant surgeon.

In 1905, Dr. Stewart was elected President of the Canadian

Medical Association, and at its meeting in Halifax, delivered a notable address.

Dr. Stewart has made valuable contributions to the literature of surgery, chiefly, as might be expected, to the subject of antisepsis, papers which are models of scientific writing in a style concise, vivid, and chaste. In 1913 the University of Edinburgh conferred the honorary degree of LL.D. on their distinguished alumnus. Dr. Stewart was one of the lecturers in the old Halifax Medical College; and at the outbreak of the war, Professor of Surgery in this University.

When the Medical Council of Canada was constituted in 1912, Dr. Stewart was elected as one of the two representatives from this province. In December, 1915, the Dalhousie University Hospital (Unit No. 7) went overseas with Lieut-Colonel John Stewart as officer commanding; and it is betraying no secret to say that the personnel of that unit was largely determined by the personality of its commanding officer.

As was well said at the farewell dinner to the officers, this response to his country's call was the most appropriate act towards the close of a life lived in the public service.

Early this year, he received the Order of the British Empire from His Majesty, the King.

It is most fitting that at such a time in our history, the University should select Dr. John Stewart as one of the two medical men in Nova Scotia on whom she desires to bestow the highest honour in her gift."

"Mr. President: I have the honour to present to you Frank Woodbury. The University has decided to request you to confer the degree of LL.D. on the chief representative of a Faculty closely allied to that of Medicine, I mean the Faculty of Dentistry.

The University cannot forget the conspicuous services rendered to this our youngest Faculty by Dr. Frank Woodbury, the virtual founder of the School of Dentistry and one of its most devoted supporters.

So outstanding have been Dr. Woodbury's services to the cause of the advancement of the Faculty of Dentistry that he has succeeded in raising it, in the estimation of those best qualified to judge, to a rank second to none in this wide Dominion."

ARMY MEDICAL SERVICES

THE under-mentioned have been brought to the notice of the Secretary of State for War for valuable services rendered: Captains, E. A. Campbell, H. Coppinger, T. McCreighton, W. Ross, medicals; H. Clarke, dentals; J. S. Adams, dentals; W. S. Alexander, H. F. Amps, J. A. Bonnell, A. Boothroyd, R. J. Boyd, D. J. Buckley, T. W. Byrne, medicals; J. W. Bradley, dentals; E. D. Campbell, G. R. Carr, A. G. Corbeau, F. J. Foley, S. H. Forbes, J. A. Foy, H. J. Hardy, F. Harrison, G. E. Hubbard, J. G. Lewis, D. N. McBean, D. McLaren, medicals; F. Martin, dentals; all of the C.A.M.C.

THE under-mentioned nurses, of the Canadian Army Medical Corps, have been brought to the notice of the Secretary of State for War, for valuable services rendered: Nursing Sisters, L. R. Aikman, E. T. Bagshawe, L. R. Batty, H. Bernard, M. L. Brown, A. A. Carscallen, E. J. Casswell, L. E. Denton, M. C. Drew, J. Fitspatrick Smith, M. G. Fox, H. Franks, E. M. Fraser, R. R. Graham, D. C. Gray, G. A. Gray, J. Johnston, H. Kerruish, N. E. MacDonald, L. McConachie, G. F. Pope, Matron; Assistant Matron Powell; Nursing Sister E. K. Ralph, Matron E. B. Ross, Nursing Sister E. Scatcherd, Nursing Sister A. Sutherland, Matron V. A. Tremaine, Nursing Sister L. A. L. Turner.

Appointments: Quarter-Master and Honorary Captain Walter Keith is posted for duty under the A.D.M.S., military district No. 2.

The undermentioned officers are posted for duty under the A.D.M.S., military district No. 1: Captain Clive Gordon Gunn, August 20th, 1919; Captain Offley Jackson Shore, September 3rd, 1919; Captain William Francis Kenney, military district No. 6, August 22nd, 1919.

Military District No. 2. Captain Aubrey Vernon Graves is posted for duty under the A.D.M.S., military district No. 2, August 20th, 1919.

Military District Nos. 4 and 6. Acting-Major George Chester Lawson, P.A.M.C., is posted for duty under the A.D.M.S., military district No. 4 from military district No. 6.

Military District No. 4. Major Alexander Howard Pirie is posted for duty under the A.D.M.S., military district No. 4, August 23rd, 1919.

Military District No. 13. Quartermaster and Honorary Lieutenant Ronald Neil MacAulay is posted for duty as Quartermaster to the Colonel Belcher Military Hospital.

Military District No. 1. Captain Stanley Gordon Mills is posted for duty under the A.D.M.S., military district No. 2, August 20th, 1919.

Military District No. 6. Major John Howard Slayter is posted for duty under the A.D.M.S., military district No. 6., vice Major Donald Angus McLeod, July 25th, 1919.

Military District No. 2. Captain Alexander Edward MacDonald is posted for duty under the A.D.M.S., military district No. 2, August 18th, 1919.

Military District No. 10. Captain Ray Bertram Jenkins is posted for duty under the A.D.M.S., military district No. 10, August 19th, 1919.

Military District No. 10. Captain James Alexander Young is detailed for duty under the A.D.M.S., military district No. 10, August 23rd, 1919.

The undermentioned officers are detailed for duty under the A.D.M.S., military district No. 2, effective from dates shown: Captain Thomas Bickerton Edminson, August 30th, 1919; Captain Chester Pettit Brown, September 2nd, 1919.

Military District No. 3. Major Hugh Alexander McKay is detailed for duty under the A.D.M.S., military district No. 3, September 2nd, 1919.

Military District No. 4. Lieutenant Charles Arthur Richmond James on appointment under the A.D.M.S. Embarkation is attached to the Clearing Services Command and will be continued on the Regimental List, September 12th, 1919.

Promotions: Temporary Major W. J. McAllister, M.C., to be Acting Lieutenant-Colonel while employed in command of G.C.O.H. Battalion, April 28th to June 3rd, 1919.

Temporary Captain, Acting Major J. A. M. Hemmeon retains the acting rank of Major, March 25th, 1919.

Temporary Lieutenant L. G. Hillier to be Temporary Captain, April 16th, 1919. (Submitted for entry in *Gazette* notification June 16th, 1919, p. 7636, incorrectly specifying date as May 16th, 1919.)

The undermentioned Temporary Captains (Acting Majors) to be Temporary Majors: J. H. Slayter, M.B.E., May 4th, 1919; C. T. Wallbridge, June 28th, 1919; C. A. Davies, July 1st, 1919.

The undermentioned Temporary Lieutenants to be Temporary

Captains: J. E. Wadsworth, June 19th, 1919; M. A. Wittick, June 20th, 1919.

Temporary Lieutenant-Colonel (Acting Colonel) T. C. D. Bedell, to be Temporary Colonel, June 22nd, 1919.

The undermentioned Temporary Captains (Acting Majors) to be Temporary Majors: P. D. Saylor, June 1st, 1919; H. C. Davies, M.C., June 16th, 1919;

Temporary Captain (Acting Major) D. G. Millar to be Temporary Major, July 16th, 1919.

Returned from Overseas: The undermentioned Officers are returned from Overseas on General Demobilization: Captain John Alexander Dougan, Captain William Edward Lindale, Captain Anderson Gordan Bates, Captain Lorne Hall Cook, Captain Charles Harold Church, Captain Berry Bowles Eaton, Captain Charles Edmund Flatt, Major Alexander James Swan, Captain John Grant Gunn, Captain Edmund Percy Lewis, Captain Arthur Waldron Johnson, Lieutenant-Colonel Garfield Arthur Platt, Captain Walter Henry Smyth, Captain Herbert John Scott, Captain Arthur Hines, Captain Robert Bruce Malcolm, Captain Alexander Warren Gregory, Captain Valmore Boucher, Captain Wilson Henry Lloyd, Lieutenant Ross Bunt Taylor, Major George William Alexander Aitken, Captain William John McLean, Major James Warren Banton, Brigadier-General Herbert Stanley Binkett, Major Thomas Lowell Buttens, Captain William Henry Butt, Captain Frederick Grant Banting, Captain Stanley Stafford Ball, Major Robert Arthur Thomas, Captain Frederick William Watts Hipwell, Major Frederick Syphen Burke, Captain George Walter MacNeil, Captain Frank James Elkerton, Captain James W. Sutherland, Major James Douglas Morgan, Captain Vernon Hill Troop Parker, Major Herman Brookfield Van Wyck, Captain Thomas Conrad Wolff, Captain David Dawson Freeze, Lieutenant William Veine MacIntosh, Captain George S. Sykes, Captain John Henry Travis, Captain Thomas Derby Moore, Major James Robert Corston, Captain Frederick Ernest Lawlor, Captain John Angus Davies, Captain Robert Faulkner Obrien, Captain Sydney George Baldwin, Captain George Franklin Nelson, Captain Alfred William MacBeth, Lieutenant Levies Cawsey Edmonds, Major Frederick Walton Blakeman, Captain Gordon Sutcliffe Goulds, Captain William Nicholson Furey, Lieutenant-Colonel Duncan Donald MacTaggart, Captain William Herbert McIntyre, Captain Angus MacKay, Captain Wilbert Harold Ely, Captain Frank Ernest Rogers.

Book Reviews

MEDICAL QUARTERLY. Volume I, No. 2. Department of Soldiers' Civil Re-Establishment. Editors: LIEUTENANT-COLONEL F. MCKELVEY BELL; LIEUTENANT-COLONEL J. L. BIGGAR. Ottawa, April, 1919.

This number is up to the standard of the first one published and will undoubtedly perform the function intended, of keeping the men working on discharged soldiers in better touch with each other. The information supplied in some of the articles is excellent, although a few show less careful preparation.

TUBERCULOSIS OF THE LYMPHATIC SYSTEM. By WALTER BRADFORD METCALF, M.D., associate in clinical medicine, University of Illinois, College of Medicine. Publishers: The Macmillan Company, Bond Street, Toronto, 1919.

This book is of interest not only on account of the subject appealing to so many practitioners but on account of the pleasing and thorough way in which the author handles the material. The volume is sufficiently large so that the subject can be treated exhaustively. The anatomical, pathological, clinical and diagnostic findings are given in complete detail. No doubt many will take exception to the author's faith in tuberculin in the treatment of his cases. His enthusiasm for this particular line of treatment is unbounded.

QUARTERLY MEDICAL CLINICS. A Series of Consecutive Clinical Demonstrations and Lectures. By FRANK SMITHIES, M.D., F.A.C.P., associate professor of medicine, School of Medicine, University of Illinois. Price, $1.50. Publishers: Medicine and Surgery Publishing Company, Metropolitan Building, St. Louis, 1919.

Clinical demonstrations are always interesting. This volume contains much good material. The subjects are handled in a clear and thorough manner and the treatment is thoroughly up-to-date. Some of the clinics are not rounded up sufficiently to be absolutely convincing.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. A Layman's Handbook of Treatment. By LAWRASON BROWN, M.D. Third edition, thoroughly revised. Price, $1.50. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

Although this book is written for the guidance of the intelligent layman who is suffering from tuberculosis, it may be recommended to most general practitioners as containing many things that they should know in order to be able to treat this disease. The fact that it has reached the third edition would indicate its merit in these days when so many books of doubtful value have a short and uneventful career. Most physicians who have had tuberculous patients, have had difficulty in answering satisfactorily the multitude of questions these patients ask. When one is conversant with this book he will never be at a loss to converse with the most intelligent layman about his disease.

A. B. C.

PENSIONS AND THE PRINCIPLES OF THEIR EVALUATION. By LLEWELLYN J. LLEWELLYN, M.B., late temporary member Appeals Tribunal Ministry of Pensions; and A. BASSETT JONES, M.B., Military Orthopædic Hospital, Whitchurch. With a section on PENSIONS IN RELATION TO THE EYE. By W. M. BEAUMONT, acting ophthalmic surgeon in the Bath War Hospital. 702 pages. Publishers: William Heinemann (Medical Books), Ltd., London, 1919.

The knowledge and experience of the authors has enabled them to produce a volume of great interest. It will be of value not only to those who are concerned with the administration of pensions but to those who are concerned with the award of compensation in industrial accident. Those who read the book will acquire invaluable knowledge of the broad principles upon which pension-systems rest. In the discussion of pension principles a history of pensions takes an important place. While the history of European practice and of existing British and Continental pension systems is complete, unfortunately, the experience of the United States and the present systems of pensioning in the United States, and in the younger nations, is not sufficiently considered.

The value of this book to those who grant pensions is increased by its discussion of many difficult points in the organization and administration of pension systems. The discussion is

pointed by many examples of cases presenting peculiar difficulties. In discussing difficulties means are stated by which they may be met or avoided. The necessity for accepting a definite principle upon which pension laws are to be based is made clear. It is pointed out that all the activities connected with the replacing in civilian life of disabled soldiers should be combined, if they are to be successful, under a single directing authority. Stress, commensurate with its importance, is laid upon the necessity for estimating the extent of disabilities not by the anatomical nature of an injury but by the loss of function resulting from that injury. In order that there may be uniformity and accuracy in the loss of function estimated to result from given injuries, it is insisted that pensioning authorities should establish tables of disabilities for the use of their medical staffs. It is pointed out that such tables of disabilities must be revised periodically in accordance with actual experience. In this connection attention is drawn to an error which now exists in many disability tables. The loss of one eye is usually placed at 50 per cent. instead of at about half that amount. The authors insist that, for many reasons, disability pensions cannot be properly administered without constant medical examination of disabled pensioners; repeated medical examination is necessary in every case where there is possibility that a disablement may increase or diminish. British experience proves that much dissatisfaction amongst pensioners is preventable by frequent and competent medical examination.

The authors make it clear that much can be done to avoid pension frauds by severe penalties for the infraction of pension laws and by providing means, such as finger-prints, for the prevention of impersonation. In discussing orthopædic methods and other methods by which the extent of disabilities resulting from injuries may be reduced, reference is made to the splints devised by Doctor Turner of Montreal. Obligation upon a disabled soldier to accept any reasonable treatment by which his pensionable disability may be reduced in extent is made clear.

Not the least value of the volume is the many references which it gives to publications touching pension problems. Those who use the book constantly will, perhaps, find fault with its repetitions and with a certain discursiveness in its composition.

TROPICAL SURGERY AND DISEASES OF THE FAR EAST. By JOHN R. McDILL, M.D., F.A.C.S., lecturer on surgery, Rush Medical College, University of Chicago, Fellow Society of Tropical Medicine and Hygiene, London. 302 pages, 69 illustrations. (1918), $4.50, St. Louis: C. V. Mosby Company; Toronto, McAinsh & Co., Limited.

The best part of this book consists of very practical notes and deductions based upon the personal experience of its author. Part of the book consists of quotations from important papers by other workers on tropical medicine. The text is well illustrated. A good part of the illustrations are original. As is always the case in unsettled countries where surgery is rarely practised, the author met with many cases of disease advanced to stages rarely seen in more settled countries where surgical assistance is always available. The book may well form part of the general reading of surgeons who expect to practise their profession in the tropics.

J. L. TODD

UNITED STATES NAVAL MEDICAL BULLETIN. REPORT ON MEDICAL AND SURGICAL DEVELOPMENTS OF THE WAR. By WILLIAM SEAMAN BAINBRIDGE, Lieutenant Commander, Medical Corps, United States Naval Reserve Force. Washington: Government Printing Office, January, 1919.

This volume is one which reflects great credit on the medical department of the United States Navy. Dr. Bainbridge had obviously exceptional opportunities for obtaining a panoramic view of the general surgical work, not only of the Allied hospitals, but also, during the first half of 1915, of the German methods. His observations are set down in this volume, which numbers two hundred and fifty pages, in a very excellent way. The book is not a mere catalogue of the methods and views of the various surgeons in England and France chiefly, but contains also valuable critical observations from the pen of the author. A word in parenthesis must be given to Dr. Bainbridge's excellent literary style. It is obvious that one cannot review in detail the whole volume, but a short catalogue of the subjects treated will suffice to give the reader an idea of the scope of the book. There is a long chapter on the treatment of war wounds by the Allies, including a consideration of all the well-known methods. This is followed by a short chapter devoted to the German methods. Then follow chapters on anæsthesia, joint lesions, fractures, trephined cases, amputations, plastic

and oral surgery, and trench fever. Then a comprehensive article on the care of the wounded from the firing line to the convalescent camp, including special notes on a large number of hospitals visited. Re-education for the disabled, both functional and vocational, is thoroughly discussed. Finally there are chapters on such miscellaneous subjects as the modern treatment of burns, provisional artificial legs, various plans of an administrative nature concerning hospital formations. Finally certain recommendations are set down. The book is illustrated by a large number of photographs which are decidedly valuable. While a number of important subjects are necessarily omitted from discussion or discussed very briefly, it can nevertheless be said that the work gives a very good birds'-eye view of the major part of the surgical field in the late war.

EDWARD ARCHIBALD

HYGIENE AND PUBLIC HEALTH. By GEORGE M. PRICE, M.D. 280 pages. Second edition, thoroughly revised. Price, $1.50. Publishers: Lea & Febiger, 706 Sansom St., Philadelphia, 1919.

We cannot discover for what sort of persons this book has been written. It seems to be a kind of general talk—cut up into paragraphs—about the science of hygiene helped out by the abundant use of large type. It does not contain a single diagram; it has a great deal of information which is, in 1919, practically possessed by everybody, and it is not nearly advanced enough for the university student of hygiene.

Under the heading, "Chemistry and physiology of milk," there is no physiology at all: the form "proteid" has been abandoned in scientific writing for "protein" many years ago. "Quarantine" is derived from an Italian and not a French word (page 262).

DISEASES OF THE EYE. By J. HERBERT PARSONS, D.Sc., M.B., B.S., F.R.C.S. Third edition, with 18 plates and 319 text pictures. Toronto: The Macmillan Co. of Canada, Ltd., 1919.

The recent appearance of the third edition of this able work indicates the demand that there is for it. We have reviewed this work in its earlier editions and can only reiterate what was therein stated as to lucidity and exactness of description. It is the work of a competent, accurate observer, who has a happy faculty of making his statements very clear both to the student and practi-

tioner. The present edition has been considerably extended as compared with the earlier ones, and a valuable chapter on the symptomatic diseases of the eye added; the operative and medical treatment has been brought up to date. The pathology has also been advanced and the book is one that can be strongly recommended to the student and general practitioner who desires the most recent advances and information without unnecessary verbiage.

J. W. STIRLING

ROENTGEN INTERPRETATION: A MANUAL FOR STUDENTS AND PRACTITIONERS. By GEORGE W. HOLMES, M.D., roentgenologist to the Massachusetts General Hospital, and HOWARD E. RUGGLES, M.D., roentgenologist to the University of California Hospital. 211 pages, illustrated with 181 engravings. Price, $2.75. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia.

Everything about this book is admirable except the title. The interpretation of roentgenograms would have been preferable to the title as it stands, which, as it stands, means nothing. The interpretation of skiagrams or radiograms would have been better still, seeing that Professor Roentgen belongs to a nation at present outside the pale of moral culture.

The treatise is exceedingly valuable and very fully illustrated; also it is decidedly less bulky than some manuals on the same subject.

A MANUAL OF EXERCISES FOR THE CORRECTION OF SPEECH DISORDERS. By MAY KIRK SCRIPTURE, B.A., instructor in speech, Columbia University, and EUGENE JACKSON, B.A., 236 pages. Illustrated. Price $2.00 net. Publishers: F. A. Davis Company, Philadelphia, 1919.

The preface to this book alone, which should be framed and hung up in every American and Canadian home, is worth far more than two dollars It inculcates certain principles and suggests certain reforms which, if carried out, would bring in the speech for the millenium. So worthy of quotation is it that a paragraph or two must be given:

"This movement deserves the highest commendation, for should not the "glory of the English tongue" be upheld. Refinement of dress, of person, is always desirable. . . . Young men spend much thought on the shapes of their collars and the shades of their ties,

and young women on the thousand and one little things that go to make up an attractive appearance; but are they always so particular about the shapes and shades of their vowels or consonants, that their speech may be as attractive as their persons Slovenly language should no more be accepted than slovenly manners.

It has long been recognized that the average American voice is shrill and the speech careless compared to the voice and speech of an Englishman. . . . Many have come to realize that our vicious speech habits are a serious handicap to national efficiency. When a whole populace says "cer'nly" and "mou'n" for "certainly" and "mountain", the victim of adenoids, of bad teeth, of cleft palate is not likely to be caught and cured."

If a person not a citizen of the United States had said these things he would have been accused of bias in favour of pure English as it is still spoken in certain circles in Great Britain, but when these remarks emanate from New York itself then we really may believe that English is after all not the dead language we had been forced to think it. The essence of the methods for the proper production of vowels and consonants is in this little book, which is not and is not intended to be an exposition of the anatomical, physiological and pathological aspects of speech. D. F. H.

Books Received

Notes on Galvanism and Faradism. By E. M. Magill, M.B., B.S., D.P.H., R.C.S.I., radiographer to the Military Hospital, Endell Street, London. Second edition, 224 pages, with 67 illustrations. Price, 6/- net. Publishers: H. K. Lewis & Co., Ltd., 136 Gower Street, London, W.C.1, 1919.

Plastic Surgery, Its Principles and Practice. By John Staige Davis, Ph.B., M.D., F.A.C.S., instructor in clinical surgery, Johns Hopkins University. 770 pages, with 864 illustrations containing 1,637 figures. Price, $10.00 net. Publishers: P. Blackiston's Son & Co., 1012 Walnut Street, Philadelphia, 1919.

MIND AND ITS DISORDERS. A Text-book for Students and Practitioners of Medicine. By W. H. B. STODDART, M.D., F.R.C.P., lecturer on mental diseases to St. Thomas Hospital Medical School, London. Third edition. 580 pages, with illustrations. Price, 18/- net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C.1.

MORTALITY STATISTICS OF INSURED WAGE-EARNERS AND THEIR FAMILIES. Experience of the Metropolitan Life Insurance Company Industrial Department, 1911 to 1916, in the United States and Canada. By LOUIS I. DUBLIN, Ph.D., and others. Published by The Metropolitan Life Insurance Company, New York, 1919.

VICIOUS CIRCLES IN DISEASE. By JAMIESON B. HURRY, M.A., M.D. 377 pages, with illustrations. Third and enlarged edition. Price, 15/- net. Publishers: J. & A. Churchill, 7 Great Marlborough Street, London, 1919.

MODERN MEDICINE AND SOME MODERN REMEDIES. Practical Notes for the General Practitioner. By THOMAS BODLEY SCOTT. With a preface by SIR LAUDER BRUNTON. Second edition. 198 pages. Price, 6/6 net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C.1, 1919.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANIMAL PARASITOLOGY, including Bacteriological Keys, Zoological Tables and explanatory Clinical Notes. By E. R. STITT, A.B., Ph.G., M.D., medical director U. S. Navy. Fifth edition, revised and enlarged. 559 pages, with illustrations. Price, $2.50 net. Publishers: P. Blackiston's Son & Co., 1012 Walnut Street, Philadelphia, 1918.

AUTOEROTIC PHENOMENA IN ADOLESCENCE. An Analytical Study of the Psychology and Psychopathology of Onanism. By K. MENZIES. 96 pages. Price, 4/6 net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C.1, 1919,

FIELD SANITATION. By MAJOR R. ST. J. MACDONALD, M.D., Canadian Army Medical Corps. 194 pages. Publishers: Henry Frowde, Oxford University Press, London, 1918.

Aids to Ophthalmology. By N. Bishop Harman, M.A., M.B., F.R.C.S., lecturer in ophthalmology, West London Post-Graduate College. 226 pages, with 163 illustrations. Sixth edition. Price, 3/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1919.

A Text-book of Urology in Men, Women and Children, including Urinary and Sexual Infections, Urethroscopy and Cystoscopy. By Victor Cox Pedersen, A.M., M.D., F.A.C.S.. consulting physician to the selective service headquarters, New York. 991 pages. Illustrated with 362 engravings. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

Hygiene and Public Health. By George M. Price, M.D. 280 pages. Second edition, thoroughly revised. Price, $1.50. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

Rules for Recovery from Pulmonary Tuberculosis. A Layman's Handbook of Treatment. By Lawrason Brown, M.D. Third edition, thoroughly revised. Price, $1.50. Publishers: Lea & Febiger, 706 Sansom Street Philadelphia, 1919.

Pulmonary Tuberculosis. By Maurice Fishberg, M.D., clinical professor of medicine, New York University and Bellevue Hospital Medical College. Second edition, revised and enlarged. 744 pages, with illustrations. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

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MENTAL HYGIENE IN RELATION TO SOCIAL HYGIENE

By A. H. Desloges

Montreal

THE kind invitation of Doctor Pagé has brought me before this assembly with the burden of addressing you in a language which is not the daily vehicle of my thoughts. However, the difficulty is alleviated by your kind sympathy and the keen pleasure I experience from being in the midst of confrères, animated with the most laudable zeal for the betterment of humanity. To advance science in all fields of society is a noble aim and worthy of all our activities. I always feel at ease in such society. I am sure to find in your hearts the indulgence I need for this paper, which I am presenting to you with a deep consciousness of our social needs, and an ardent desire to bring about an alleviation of these.

I desire to show first what has been done for the betterment of the treatment of the insane, and then indicate what mental hygiene is able to do to diminish the dangers to which we are exposed, and to stop, if possible, the threatening tide of insanity.

Let us first cast an inquisitive eye into the history of mental medicine. This inspection will reveal to us the wonderful progress that this branch of medical science has made since the days of Hippocrates to our own period.

In the primeval days of medical knowledge, insanity was ascribed to the influence of a favourable or an irritated deity. The insane were god-possessed. Most of them were said to be the prey of the infernal deities, but some were thought to be the friends of the superior gods, to be inspired by them and able to tell the future

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by their assistance. The Delphic oracle was one of the most famous examples of these. Virgil describes the Cumæan Sybil as if struggling with the god under whose influence she was about to speak and reveal to Æneas the future of his destiny. "*Phœbi mundum impatiens Bacchatur vates, magnum si pectore possit excusisse deum.*" The poor epileptic, impatient of Phœbus, strives to disburden her soul of her tyrannic ruler, but the more efforts she makes the more the terrible god causes her to writhe with foaming mouth and subdues her ferocious heart; the sybil bellows in her cave, while with much rigour Apollo shakes the reins over her as she wildly raves.

This description is nothing but one of the scenes witnessed every day in our epileptic asylums. But no longer is the sad fate of our patients considered a favour of heaven nor a curse of the Almighty. The insane has been raised to the dignity of a patient. He is no more lashed in order that he may recover.

So long as insanity was deemed to be due to the intervention of the gods, the treatment consisted chiefly in religious ceremonies and practices.

Hippocrates, the creator of the science of mental medicine, was a member of that priestly family, the Asclepiades, who claimed to be descended from Æsculapius, and who had in ancient Greece the monopoly of the art of healing.

He was the first who discerned the pathological nature of insanity. With the most praiseworthy insistence, he strove to oppose the medico-religious practices of the Asclepiades, and to substitute for them a treatment rational and medical. Instead of exorcisms and incantations, he advised purges, emetics and bleeding, a vegetable diet, hygienic exercises, music and travel.

After the days of Hippocrates, medical knowledge and teaching passed from Greece to Egypt, following the dismemberment of Alexander's empire. Little, however, was added to our knowledge of insanity during the next three hundred years.

Asclepiades of Bythynia was the first to divide cases of insanity into acute and chronic alienations. He was also the first to try substitutive medication, and even advised intoxication in the general treatment of mental alienation.

Celsus at first gave wise rules for the hygienic and moral treatment of the insane, but unfortunately in later years advised starvation, chains and chastenings to tame the insane as soon as they began to show signs of want of sense, "*fame, catenis, vinculis coercendus est.*"

Aretæus of Cappadocia has bequeathed to us marvellous de-

scriptions of the various forms of mental alienation. A reaction must have taken place in the views of the profession since the days of Celsus, since nowhere in his works is mention made either of ties or ligatures for the phrenetic, or even for the violent.

Similarly in the works of Coelius Aureliasus, who describes himself as a translator of Soranus, coercion is no longer recommended. After an admirable exposition of the rules for the moral and physical treatment of the insane, he makes an eloquent pleading for the suppression of coercive measures.

Let me quote what he says against physicians who have recourse to violence: "They rather do seem to be delirious than disposed to cure their patients when they compare them to ferocious beasts to be tamed by the want of food and the torture of thirst. Led away also by the same error, they wish us to load them with cruel chains, without realizing that their limbs might be thereby bruised or broken, and that it is more decent and easy to restrain them by the hand of man than by the useless torture of iron bands. They even go so far as to advise corporal violence, scourging, as if to force the revival of reason by such a provoking treatment; wretched mode which does nothing but aggravate their state, stain with blood their limbs, and offer them the sad spectacle of their pains at the very moment they recover the use of their brain and wit."

Galienus, the celebrated physician of Pergamos, who wrote five hundred treatises, and whose ideas had so great an influence for fourteen centuries, has said but few things about mental alienation. He divided it into idiopathic and sympathetic insanity, or insanity by consensus.

After the death of Galienus, all medical knowledge falls into obscurity and confusion. Even the Arabian physicians, Rhazes and Avicenna, only develop the ideas of Galienus about insanity by consensus, the seat of which they placed in the liver and the spleen.

The Middle Ages were dominated by a belief in the influence of devils; superstition existed far and wide. Thousands of poor wretches died victims of the ignorance and prejudices of the crowd, and lost their lives owing to the loss of their reason and became the prey of the flames. Only towards the end of the sixteenth century did physicians slowly come back to sound traditions. About this time numerous physicians contributed to the advancement of mental science, Alciatus, Montague, Baillou, Lepois, Platea, Sennert, Bonet, Zacharias, Sydenham, Willis, Nieussens, Boerhaave, Morgagni, Sauvages, Lorny, Cullen.

With Cullen, who died in 1792, we have advanced far beyond

the ignorance of the Middle Ages, but the condition of the insane was yet deplorable. They lived scattered in prisons and in a few refuge houses. Very few were received in hospitals. The treatment consisted invariably in shower-baths, cold baths, and repeated bleeding with the administrations of hellebore, purgatives and antispasmodic remedies. When, after a few weeks of such a regime, the sick failed to recover, he was sent to the "*Petites Maisons*", to La Salpêtrière, or Bicêtre, in France, to Bedlam, in England.

There, badly fed, covered with rags, loaded with chains and iron collars, in filthy cells, once destined for criminals, lying on rotten straw, breathing a mephitic air, they dragged out a miserable life, exposed to the eye of the public, who, on feast days, were admitted, for money, to look at this spectacle and tease the poor wretches, as if they were wild beasts, through the iron bars of their cage.

Sir Bennet could say in the Lower House, referring to this:—"If ever an institution was a disgrace to England, it is Bedlam."

Then came Pinel, who was made head of the insane service at Bicêtre, in 1793. He caused the chains of the insane to be struck off. By his forceful initiative and perseverance, he accomplished what others had vainly desired, the rehabilitation of the insane and his restoration to the dignity of a patient suffering from an illness.

"To keep," said he, "in a habitual state of seclusion and restraint the extravagantly insane, to deliver them helplessly to the brutality of servants and custodians under the pretence that they are dangerous to the public, to drive them, in a word, with an iron rod, as if to accelerate the end of an existence deplorably wretched, is no doubt a most convenient method of supervision, but is a method which owes its origin to centuries of ignorance and barbarity."

About this same period, Doquin, in Savoy, Chiaruggi, in Italy, and Tuke, in England, also carried out reforms.

But Pinel was more than a reformer; he was a man of science and his "Treatise on Mania" is justly celebrated. Cuvier could say of it in the Institute of France, that "his booklet was not only a book on medicine, but was also capital work on philosophy and even on morality."

In France, Esquirol, the successor of Pinel, had as great an influence on mental medicine as Pinel had on the moral condition and treatment of the insane. He was a philanthropist, a reformer, a scientist and a master. He developed a school of famous disciples.

Their list is a long one. Under their impulse, psychiatry has made, in all countries, great progress. The characteristic of this advance movement is the effort to apply to psychiatry the scientific

data and methods of modern general pathology. Psychiatry has ceased to be a single chapter of philosophy, it is now, and will become more and more a branch of medical science, or rather of biology.

Thanks be to God, the old methods have given place to more humanitarian ways. The insane are now treated with charity and science in well organized hospitals, and especially in those in which the superintendent possesses a deep sense of the dignity of man and holds the principles of an enlightened philanthropy.

However, although we can now point with some satisfaction to these improvements in the condition of our hospital patients, we should not conclude that the organization is complete. To treat the insane well is very good, but something should be done to prevent the overcrowding of our institutions. The most complex problems are before us. So many causes contribute to increase the number of lunatics, that if we do not find immediately the means of damming this increasing tide of alcoholism, syphilis and other deteriorating influences, the nation may be overwhelmed and sink under the curse of feeblemindedness. To prevent this, we welcome the powerful assistance of the Society for Hygiene. This organization will accomplish much if all medical men and social workers as priests, teachers and others try to enlighten the people as to the dangers to which they are exposed, if they ignore the principal causes of insanity.

Such an education of the people will develop better conditions and the evils of alcoholism, syphilis, and heredity will be lessened.

These three causes of insanity are not the only ones, but they are considered the most important.

Alcoholism is a well recognized disease which progressively impairs the mind, will, strength and manual skill of a man. The loss of reason may follow as a consequence of too frequent intoxication or of a constant state of inebriety, which may be said to be a temporary insanity. The errors about alcohol are deeply rooted, but, in these latter days, the evidence of its noxious action has caused many to recognize sounder principles. When a man is thirsty, he thirsts for water, and water should be given him and not alcohol.

Our hospitals and asylums would be more than sufficiently large, if there were no alcoholics, for out of every two persons in them, one is an alcoholic.

Alcohol is one of the universal providers of lunatic asylums, and intemperance might be styled one of the most active agents to keep the doctors busy.

The recent law adopted by the government is one from which we may expect the best results, and the prime minister should be congratulated for having preferred the interests of his fellow-citizens to those of the bar-keepers. This law of temperance, as we may call it, will bring whisky drinkers to prefer wine and light beer or cider to their poison. The general health will be enhanced and, consequently, in sounder bodies we may hope to see sounder minds.

As an alienist, I cannot be in favour of total abstinence. However, I am satisfied with this mitigated law of prohibition. The drunkard, you may be sure of it, will continue to get drunk just the same, but the new generation, the young men who have not lost their sense of dignity and decency, will never become drunkards and alcoholic fathers will cease to breed a brood of candidates for the lunatic asylums.

The next cause of insanity is syphilis. The disastrous effects of this contagious disease are well known to the physician, but the public are unaware of its dangers, of its contagiousness, and of its frequency. The lady buying in the store is ignorant that the syphilitic girl that serves her may be the cause of infection to her and her family. This disease is growing very frequent, and physicians who know of it must use every effort to check it.

It is a pleasure to me to state that at the last meeting of the Quebec Legislature, the Provincial Board of Hygiene has had a bill accepted which will surely bring good results. This legislation will contribute to lessen the number of cases of general paralysis. It will, to say the least, give to those afflicted by this malady, the means of being scientifically treated, without being ruined by so-called specialists.

Physicians on all possible occasions should teach their clients the dangers of the day. Do not speculate on human degeneration. Let your ambition be that of being a healer, a saver, a helper, a giver of health, happiness and joy, a distributor of life, a consoler, and your reward will follow surely. As we sow, so shall we reap. The serious consequences of syphilis should be known to all, and we should take our part in the education of the public.

A third cause is heredity. Please permit me to quote a few lines from Morel. "By the observation of the links and the reciprocal dependence of pathological phenomena, transmissible through heredity, I came to create the important varieties of hereditary alienations. I have proved that betwixt the simplest anomoly in the laws of moral sensibility designated under the name of moral mania, reasoning mania and those states more or less properly

called imbecility, idiocy, cretinism, there exists a consecutive gradation."

Heredity, it is certain, is a great factor in mental alienations. Alcoholic heredity, says Dupuy, is the most frequent cause of idiocy, feeble-mindedness and madness. The sons and daughters of alcoholics have a tendency to pseudomania, to kleptomania, to dipsomania. "The drinker," says he, "breeds the degenerate and the degenerate breeds the drinker."

As to heredity through syphilis, it is no less obvious.

But what have we done to come to practical results? Have we reflected upon the cerebral ravages caused by epilepsy? This sickness is hereditary, when not the result of intoxication or an accident. Have our medical societies, in lectures and reports, and has the physician in his office, given practical advice to the sick or his relatives? Has anything been done to enlighten the bride or the bridegroom on the necessity of avoiding marriage with an epileptic? Has anything been done to check marriage to the syphilitic? Have parents been informed on the dangers of letting their daughters marry a drunkard, a debauchée, a syphilitic, or an epileptic?

The time will come when candidates for marriage will have to show their sanitary testimonials in order to be allowed to legally enter upon it, when everyone will feel the necessity of protecting himself against the possibility of contagion and of a breed of feeble-minded children.

I am happy to note that the alarm has been sounded, and that as a consequence the Society of National Mental Hygiene has been organized, because the mentality of the community is menaced.

Under the impulse of an epileptic and hallucinated Kaiser have we not seen a whole nation stricken with a fit of megalomania? The result has been the terrible war now about to be ended by the signing of the Treaty of Versailles. In other countries we can observe the frenzy of Bolshevism, a collective insanity under the impulse of socialistic subversive literature threatening to invade the world.

Much remains to be said, but I must conclude, for in a brief paper we can only give but a meagre and inadequate sketch. We have merely invited your attention to the subject of mental hygiene. Those wishing to interest themselves will find much to be accomplished in this field; physicians who appreciate the situation, and are ready to take their share in educating their patients on these fundamental facts to which I have referred can do great good, and by the united efforts of the profession, much of the sorrow and misery of this world will in time be alleviated and disappear.

MULTIPLE INFARCTS OF THE SPLEEN IN MALIGNANT ENDOCARDITIS, RUPTURE OF THE SPLEEN AND PERITONITIS

By Professor A. Vallée

Laval University, Quebec

I RECENTLY had the occasion to make a post-mortem examination of a patient whose case was a most interesting one, both from its complexity, and in the numerous and complete pathological entities it presented. For many reasons the clinical and necroscopic observation of the case should be reported, both on account of the numerous difficulties met with in making a definite and complete diagnosis, and also for the study and co-ordination of the lesions which were found after death.

Clinical Observations. The patient was a man aged forty-five years, who had been addicted to drink for many years. He was admitted to the medical wards of the Hôtel Dieu Hospital, Quebec, in July, 1917, suffering from cardio-renal troubles. He presented very distinct murmurs of insufficiency both of the aortic and mitral valves, and also very marked evidence of Bright's disease, with œdema and ascites. The analysis and microscopical examination of the urine revealed albuminuria with numerous hyaline casts, red blood corpuscles, leucocytes in abundance and renal cells.

These symptoms lasted without change until early in September when the quantity of leucocytes became so abundant in the urine as to be soon recognized as pus. However, the cardiac and renal symptoms did not in any way appear to be increasing in a serious manner. At the time a slight rise in the temperature was noticed, the fever being very irregular without marked exacerbations, but with complete remissions, facts which suggested the possibility of a suppurative lesion of the kidney. In addition, the patient complained four or five days before death of a very acute pain located first in the right hypochondrium and soon afterwards in the left, which became intolerable. This pain disappeared later, to increase again on the evening before death; it was then well located in the left and upper portion of the abdomen. The next day a

careful investigation showed a painful reaction of the abdomen, without any particular location of the pain, nor any ectasis or distension of the bowels. The patient died during the night.

To the first diagnosis of cardio-renal lesions, were certainly to be added other disorders which could not easily be defined, special attention having been given during life on many accounts to the kidney.

Post mortem. The post mortem furnishes more important details. On opening the chest, we first found adhesions of the whole of the left pleura and a slight congestion of both lungs.

There were a few grams of yellow liquid in the pericardium, and milky maculæ on the visceral serous membrane. The heart weighed 450 grams. On trying the water test, a very wide insufficiency of the aortic valve could readily be demonstrated. This valve was thoroughly altered, the *nidi hirundinis* had almost disappeared, and instead we could see a few simple vegetations on the upper surface, but vegetative and ulcerative ones facing the ventricle. These vegetations were of a dark colour, and filled the whole of the signoid cavities, or rather pushed them back to the aortic wall. The commissures were worn out, and the slightly thickened edges were dull and white.

On the mitral valve there was slight sclerosis along the edge with white trabeculœ scattered all over it and two small vegetations lying on the auricular surface of the valve a short distance from the edge. These vegetations, the largest of which on the large valve was not more than 3 or 4 mm. in diameter, were irregular, resembling a mulberry of a brownish colour, and scarcely adherent. The other valves showed nothing particular except slight sclerosis. The slightly thickened parietal endocardium was specially altered in the metro-aortic region where sclerosis was more marked and of a distinct white colour. Myocarditis was evident with slight hypertrophy of the left ventricle.

Small atheromatous spots without calcification could be seen all over the aorta, and were particularly numerous and larger on the abdominal portion of the artery.

In the abdomen, recently formed pseudomembranes could be seen on the omentum, the intestine and mesentery. A large quantity of liquid (a few liters) of a dark brownish colour overflowed, and the parietal and visceral peritoneum presented characteristic hæmorrhagic spots.

There was nothing to be noticed as far as the appendix, the intestine, the stomach, or the pancreas were concerned. The liver

was enlarged, weighed 1750 grams, and was hyperæmic. Nothing so far could explain the presence of the well characterized peritonitis, but on examining the spleen it was found to be very large, soft, almost fluctuating, friable and ruptured. It weighed 415 grams. The capsule, slightly thickened, was covered with pseudomembranes of a deep yellow colour at the superior pole, and of a purple gray in the inferior one. On taking out the spleen, many slashed irregular ruptures, easily compared with certain large cavities of the lung in tuberculosis, as described by Cornil and Ranvier, were to be seen in it. On a section we found an immense infarct of a pinkish yellow colour with its base to the outer side of the organ, and the apex at the hilum (very typical infarction). In the centre all the blood vessels presented thrombosis. The pale colour of this infarct indicated that it had taken place at least some days previously; it was easily differentiated from the rest of the splenic tissue which was of a dark red, and congested in the parts where the blood could still circulate. The ruptures of the organ were covered with pus, and numerous fissures had dissected the spleen on all its different portions, carving it in different ways. In the interior there were cavities filled with a thick black fluid, which characterizes suppurative lesions of the spleen.

The pulp was sprinkled with pink, gray, and deep brown dots. The disintegration was such in certain parts that it seemed similar to those cases of gangrene of the spleen following diffuse abscess of this organ, and indicated the existence of many infarcts.

The left kidney was congested and had a thickened capsule which, however, could easily be removed. The tissue was granular with large dentations, the cicatrices of old infarcts. One on the outside was a full centimetre deep. The pyramids were also congested, and everywhere could be seen a petechial hæmorrhage. The cortex was thin with tracks of hyalin degeneration. The left kidney weighed 210 grams. The right kidney presented the changes together with cicatrices. The rest of the genito-urinary tract was normal.

Microscopical examination. The microscopical test examination of the spleen, kidney and myocardium verified the changes seen at the post mortem. Many slides were prepared, all of which gave the same results.

In the spleen there was a diffuse sclerosis of all interstitial tissues and arteries. The pulp substance was granular, at some points it had altogether disappeared and only the reticular tissue could be seen; this was even destroyed at some points where cavi-

ties filled with pus could be seen. The vessels were mostly all plugged. The Malpighian corpuscles were enlarged and many of them had ruptured.

The bacteriological investigation showed numerous cocci, mostly isolated singly, but a few of which could be seen also in small clumps. They were gram positive and appeared to be staphylococci. Cultures had not been set out.

The kidney showed very plainly a subacute nephritis with numerous nodular collections of leucocytes scattered everywhere and all the common phenomena of sclerosis, hæmorrhage, and degenerative alterations in the tubuli and glomeruli.

Myocarditis with tracts of polynuclear cells and vitrous degeneration could be seen in the sections from the heart.

Diagnosis. The diagnosis, although complex, is now made easier. The patient suffered from a malignant subacute endocarditis, with subacute nephritis and pyæmic infarcts of the spleen. This last alteration was the cause of a rupture of this organ and peritonitis. The infection was probably due to staphylococci.

Malignant endocarditis is generally the consequence of an infectious disease or pyæmia, and under these circumstances the diagnosis is simple, on account of the sudden existence of cardiac manifestations and symptoms. In other cases, malignant endocarditis will appear in the course of an old cardiopathy, and will then be recognized by an increase in the symptoms of cardiac disease, and the appearance of symptoms of a very general character in the patient's condition. In very rare circumstances these cases of endocarditis appear suddenly, the patient being apparently in perfect health.* Subacute malignant endocarditis does not proceed in the same manner. It is often recognized as the first manifestation of any infectious trouble, appearing in the course of an old chronic cardiopathy, the valvular alterations becoming an elective point for the action of the micro-organisms. The clinical diagnosis is still more difficult in this variety on account of the knowledge of pre-existing cardiac lesion, the lack of temperature, or at least of irregularities in it,† the absence of symptoms which indicate one of the typical forms of acute endocarditis, namely, the cardiac, the meningitic, the typhoidal, or the pyæmic. These are exactly the facts which occurred in this case, and would easily mislead a diagnosis, on account of the aortic insufficiency present, which Huchard has described‡ under the title of "Aortic insufficiency of

*Bouchard et Brissaud: *Traite de Medecine*, vol. viii, page 314.
†Balthazard et Macaigne: *Precis de Pathologie Interne.*
‡Huchard: *Six Lecons Cliniques sur les Maladies du Coeur.*"

arterial origin." Under such circumstances special attention is often drawn to the renal function as was the case in this patient. The preceding history (alcoholism) and the concurrent mitral alterations assisted in this diagnosis.

We shall not insist upon the myocarditis and pericorditis, these facts being of no special value in the present case.

The diagnosis might have been made when the rise in temperature and the abdominal pain occurred, but the presence of pus and the pain in the right hypochondrium made it doubtful. The infarct of the spleen which most certainly occurred at that moment could not be diagnosed by clinical symptoms unless attention had been specially called to that organ by a very careful investigation showing hypertrophy and a well localized tenderness as well as the pain. Even then it often remains unperceived.

In fact, if perceived, it might give a true knowledge of the existence of malignant endocarditis, these infarcti being really one of the most constant accidents in this lesion, the kidney and all terminal vessels being also possibly plugged by emboli. On the other hand, malignant endocarditis may be considered as the most frequent cause of infarcti of the spleen. The emboli in these cases are mostly always the consequence of a particle of a valve, vegetations, or fibrinous tissue detached from the altered valve. In a few instances they may be due to micro-organisms only, as occurs in typhoid, or they may be produced by thrombosis of the splenic artery or its terminal branches, following sclerosis of this vessel.

This, or these, infarcti, for most frequently they are many* once they exist, do not always produce fatal accidents, specially when the infarct is not of an infective nature. It can then disappear, leaving only sclerosis and a cicatrix, such as was to be seen in the kidneys. The abscess of the spleen on the contrary, is not frequent; however, Osler points out that the most frequent of these abscesses is the one following a septic embolus which can mostly always be diagnosed only at the post mortem.

Rupture of the spleen does not often happen as a consequence of an abscess due to infarct, and on this account Osler is the only author whom I could find, who mentions the fact†. The most important symptom of this rupture of the spleen being the haemorrhage which follows, it seems important to know the fact, for in a rupture following an infarct, the blood having no access to the

*Bouchard et Brissaud: *loc. cit.* — Cornil et Ranvier: *loc. cit.*

†Osler: "Modern Medicine"

portion which is ruptured, this symptom will be lacking, and in fact it was lacking in our case, in which peritonitis was the only and easily understood phenomena.

As for the subacute nephritis, its clinical symptoms had been very distinctly noted, and there is no use insisting on the fact, except to emphasize the importance of a perfect and complete diagnosis between the presence of pus and simple hyperdiapedesis of leucocytes, even in greater number in the urine. The absence of all suppurative lesions in the urinary tract evidently proves here that there was at least no microscopical alteration of this kind.

On the bacteriological account many conditions pointed to the diagnosis of staphylococcus. The special appearance of the microbes as perceived on the slides, the benign evolution of the infection, seem to prove this fact. Pneumococcus could have given a primitive endocarditis without other infection by this microbe, but metastasis does not seem as frequent in its case. Streptococcus shows more seriousness in the clinical symptoms. Other pus forming organisms have a known origin in a definite process. Bacilli can be put aside, even those specially described as causing endocarditis, the specimen diagnosed here being a typical coccus. Anyhow the investigation of the bacterial origin being incomplete through the cultures not having been made, the data upon this point cannot be exactly confirmed.

A GIFT of $20,000,000 from John D. Rockefeller for the improvement of medical education in the United States was announced recently by the General Education Board. The official announcement states that the income of the $20,000,000 is to be used, and the entire principal is to be distributed within fifty years.

THE PRACTICAL ASPECTS OF QUARANTINE FOR INFLUENZA

By Dr. T. H. Whitelaw

Medical Officer of Health, Edmonton, Alberta

PROBABLY never before has the medical profession been confronted with a more baffling problem than has been presented by the influenza epidemic, both as to its possible prevention and treatment. The apparent futility of practically all measures of prevention, some of which were, at the outset, acclaimed with great assurance by members of our profession, and the failure of any particular line of treatment of the many practised and advocated to be generally recognized and adopted, as being specially advantageous, make it incumbent on one attempting to discuss any phase of the subject to approach it with becoming modesty and diffidence.

Influenza began to appear in Edmonton about October 11th, 1918. From October 15th, by special regulations of the Provincial Board of Health, the disease was made reportable and subject to modified quarantine by placard similar to that used for measles, whooping cough, etc.

Before the disease had become epidemic, the City Board of Health, on October 18th, ordered the closing of all schools, churches theatres, picture shows and all public meetings generally.

The Provincial Board of Health on October 25th passed a resolution ordering every person in the Province of Alberta to wear a mask outside of his or her house or residence, except when necessary to partially remove the mask for the purpose of eating.

This order was continued in force until November 23rd, when it was made optional, after which practically no masks were worn except in hospitals by nurses and attendants. Had this mask order been instituted a few days before the epidemic reached its peak, it would probably have been acclaimed as the chief factor in bringing about the rapid subsidence of the epidemic, but unfortunately for the extravagant claims made in justification of the mask order as a means of prevention, the number of cases of the

disease continued to increase rapidly for some time after the order was enforced, and public confidence in it as a prevention soon gave place to ridicule. It will thus be seen that nothing was neglected which in theory might possibly have prevented the spread of the epidemic, but the apparent futility of all the laudable attempts at control, are indicated by the following figures, which do not include the two hundred and forty-nine non-residents, coming to the city for treatment, of whom over 50 per cent. died.

	Cases reported	Deaths
October.	2208	91
November..	2823	254
December.	1238	76

With this digression, I will now confine myself to the consideration of the quarantine for influenza attempted as one of the means of prevention.

At the outset of the epidemic, some physicians were reluctant to admit that the cases were genuine cases of the so-called "Spanish influenza", but later, when numerous deaths occurred, it became apparent to even the most conservative that the real disease prevalent in the East was actually in our midst with its frightful toll of death.

In spite of the energetic work of the officials of the health department, in promptly following up all reports of physicians, and information derived from all other sources, by placarding premises and establishing quarantine, it is apparent that the number of cases above reported and quarantined did not at any time represent more than 60 per cent. of the actual number of cases in the community. Hundreds of cases, whether a physician was in attendance or not, were of so doubtful or mild a nature as to be regarded as common colds, and as a result, no quarantine or placard could be affixed. The difficulty of establishing an accurate diagnosis in many of the milder cases was the stumbling-block in the way of carrying out quarantine measures efficiently. Many citizens regarded the placard as an injustice, either because they did not believe the diagnosis justified, or because their neighbors were alleged by them to be avoiding quarantine by concealment or evasion. Some physicians began to be careless or indifferent in reporting their cases, because they alleged that other physicians were not reporting their cases, and charges of discrimination were frequently made against the officials of the health department on

whom the duty of placarding and establishing quarantine devolved. The number of houses to be placarded and quarantined was so great, that the limited staff of health officials was greatly overworked, and all, except two, suffered from and recovered from the disease during the epidemic. To have attempted prosecutions in all alleged and real cases of failure to report the disease on the part of householders or physicians would not in my opinion have been of any practicable benefit, for the reason that no magistrate would be likely to convict on evidence, which, owing to the impossibility of absolute certainty in the diagnosis of most cases, must necessarily be contradictory or at least doubtful.

It did not appear that those who took the most elaborate precautions to avoid the infection enjoyed any greater immunity from attack, than did those who appeared to take no precautions whatever. The maintaining of bodily health by normal living and the avoidance of panic, worry or fatigue, seemed to be the only practical method of combatting the infection. The element of fatigue among doctors and nurses who necessarily had to work long hours, undoubtedly accounted for their tendency to eventually fall victims to the disease, rather than the element of special exposure which their work entailed.

From the above considerations I can only conclude that the quarantine and placarding for a disease of the peculiar nature of influenza is impracticable, and the expenditure of time, energy and money in attempting to carry out such a law appear to be disproportionate to any apparent benefits derived therefrom. The fact that the quarantine imposed was only a modified one, which permitted all except the person or persons affected to enter or leave the premises, has led some physicians to suggest the advisability of making the quarantine a strict one, as is the case in scarlet fever or diphtheria. The practicability of applying strict quarantine to influenza is doubtful, as the following considerations indicate.

In influenza there are many grades of severity, from the severe abrupt onset, followed quickly by dangerous developments, chiefly pneumonia, so-called, to the slight indisposition which resembles a common cold or coryza, and from which it is impossible to distinguish it. The accurate diagnosis of hundreds of cases is therefore very difficult, and many physicians hesitate to pronounce such cases as influenza or to report them as such. For this reason, and also because no physician at all may have been called, many cases of influenza even under our present modified quarantine law remain unreported. To change this to a rigid quarantine would

undoubtedly have a decided tendency to increase this hesitation of physicians to report cases and also add largely to the number of householders, who in their desire to avoid quarantine of any kind, neglect to call in their family physician as long as possible. There is some justification for believing that certain physicians are given a preference, and profit thereby, because they are known to belong to this hesitating class and because fewer placards follow on their trail than on that of the more conscientious physicians, who gave the public the benefit of the doubt by reporting even their doubtful cases as suspicious. Physicians who lack public conscience should undoubtedly be prosecuted, but the difficulty of obtaining a conviction in the case of such a disease as influenza is obvious, and can only be appreciated by the health officer who has attempted such prosecutions under our present laws.

That the disease was much more prevalent and affected a much larger proportion of the people than the worst epidemic of scarlet fever, diphtheria, and smallpox, we are every likely to have, is apparent. Were it similar to the above rigidly quarantined diseases as to its prevalence and method of transmission, nobody could reasonably question the wisdom of applying to it the most rigid form of quarantine. But we do not yet know with absolute certainty all the avenues by which it is transmitted, and to put on a strict quarantine and maintain it effectively against such an insidious and extremely prevalent affection as we now know it to be, if we take into account the great variety of its manifestations, would necessitate an army of inspectors or policemen and a whole fleet of delivery rigs supplying food at the public expense.

In Chicago, notification and isolation of the patient was required, but placards were only affixed to premises where the occupants had been delinquent in obeying the law *re* notification of the health department and isolation of the patient as far as possible. This method is believed to have secured a much better notification of cases than our system of placarding, which appears to penalize those who honestly try to co-operate with the health department, while those who conceal the disease or neglect to report in large numbers, are subjected to no inconvenience and cannot be prosecuted in the majority of cases with any hope of success. The law regarding modified quarantine associated with placarding of the premises, as applied to the minor diseases, German measles, measles, whooping cough, mumps, and more recently influenza, is, generally speaking, more honoured in the breach than in the observance. Can any health officer safely assert that in his municipality any reason-

able proportion of the cases of such diseases are ever reported to his department, where placards are used? To many of such minor affections no physician is called, and there is little doubt that the desire to avoid quarantine and especially the placard, which unfortunately appears to be regarded with so much disfavour, deters many from calling in their physicians. In Edmonton, knowledge of the majority of such cases is derived from the school teachers who report to the health department all children absent from school without proper explanation. Where there are no children of school age, it is quite possible for such minor affections to exist and recover without detection.

To sum up, it is evident, that no public health law, which has not the endorsation and support of the public generally, can ever be reasonably well enforced. Human nature cannot be altered, but laws can be, and it seems desirable that our regulations regarding quarantine should be revised in such a way as to secure the maximum co-operation of the community, including the medical profession, in their enforcement. The apparent success of the method followed in Chicago in connection with influenza cases, suggests that the same method might work out advantageously in many of the minor and less serious infections now placarded under the name of "modified" quarantine, and secure a much more efficient control of these infections by health departments. It would penalize by a placard only those who failed to report and submit to the instructions of health officials, and would thus be a strong incentive in securing the co-operation of the public generally with health departments in the prevention, as far as possible, of the minor infections, which are unfortunately regarded so lightly by the majority of the community in spite of the fact that many untimely deaths result from them.

I am aware that some reasonable arguments can be advanced in support of placarding the minor or modified quarantine infections, but in my opinion the disadvantages of such a measure, from the standpoint of possible prevention and control, far outweigh the advantages. Following the world war, we hear a great deal about co-operation in all lines of human endeavour. Would it not be possible to secure a greater measure of co-operation of all the forces in our community, in obtaining the maximum efficiency in the enforcement of our public health laws, by reorganization and revision of these along the lines of sane and reasonable regulations which are in accord with the latest and most reliable information derived from scientific investigation, experiment and experience?

TREATMENT OF INFLUENZA

By F. H. Wetmore, M.D.

Hampton, N.B.

THE incidence and mortality rate of this disease in the recent pandemic were so high, and the probability of its near recurrence is so great, that treatment both prophylactic and curative becomes of vital importance. Let us see what our recent experience throughout the world has taught us.

Prophylactic measures. In preparing for another outbreak, the health department should again have ready a list of available nurses, and the doctors should be asked to report cases of the disease to the department.

A committee appointed by the American Public Health Association at its annual meeting, held in Chicago last November, to give a report on the disease and formulate rules for its prevention, stated in part that we should:

1. "Break the channels of communication by which the infective agent passes from one person to another.

2. "Render persons exposed to infection immune or at least more resistant by the use of vaccines.

3. "Increase the natural resistance of persons exposed to the disease by augmented healthfulness."

1. The channels of communication by which the infective agent is conveyed from person to person are recognized. And some of the methods by which these channels are broken are, isolation of the sick, wearing of masks, and washing of hands by the nurses and attendants, and the care of the sputum. Pamphlets containing these and other directions might well be prepared by the health department, and distributed freely to the public through the post offices, public schools, etc. But these measures and the closing of public places were put in force during the last epidemic, and were found to be lamentably inefficient in checking the spread of the disease. There were too many light, unrecognized cases—carriers of the disease—the so-called contact cases—to say nothing of the

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probability of healthy carriers—whose actions, of course, could not possibly be controlled. Let us then look at the second rule formulated by the Committee, namely:

2. "Render persons exposed to infection immune, or at least more resistant by the use of vaccines." By prophylactic vaccination we have controlled the smallpox scourge, and rendered our armies probably twice as efficient by preventing outbreaks of typhoid and para-typhoid fever. We also vaccinate successfully against dysentery, cholera, and pneumonic plague, a disease the most deadly on record to attendants on the sick, which gives off infected material from the mucous membranes as does influenza. The measures used in preventing attendants from taking pneumonic plague are vaccination, and wearing of masks, followed by gargles and mouth washes. By far the most efficient of these is vaccination. A prophylactic vaccine for influenza, to be of most use, should contain not only Pfeiffer's bacillus, which is supposed to be the cause of the initial symptoms, but also different strains of the pneumococcus, and streptococcus, one or both of which is the cause of the deadly complications—the different forms of pneumonia. An authority on preventive medicine, Dr. E. C. Rosenow, of Rochester, prepared such a mixed vaccine, and found it of great benefit as a preventive in the epidemic. And in different parts of the globe bacteriologists connected with military organizations, which have done much in the past for preventive medicine, have prepared a similar vaccine which they report was of great prophylactic benefit in the recent epidemic.

Major F. T. Cadham, C.A.M.C., of Winnipeg, in the June number of the Canadian Medical Association Journal, reports the results of inoculation of 4,842 soldiers, out of 7,600 resident in the district. Of the inoculated there were two hundred and eighty-two admissions to the influenza hospital with seventeen cases of pneumonia, 6·05 per cent., and five deaths, 1·7 per cent. Of the uninoculated there were two hundred and thirty-eight admissions, with forty-one cases of pneumonia, 17·1 per cent.; and seventeen deaths, 7·1 per cent.

Admissions to Hospital

		Pneumonia	Per cent.	Deaths	Per cent.
Inoculated.	282	17	6·05	5	1·7
Uninoculated.	238	41	17·1	17	7·1

Captain D. A. Macdonald, who was in charge of the hospital, states that in the inoculated, the disease and complications were not so severe as in the uninoculated, and the average stay in hospital was only half as long. No soldier who received two inoculations died of the disease.

The records of the use of the same or similar vaccine prepared by Dr. Gordon Bell, chairman of the Manitoba Provincial Board of Health, and used freely among civilians of Winnipeg and the West, show that the incidence of pneumonia was about four times as great, and the mortality rate was four times as great in the uninoculated as in the inoculated.

The Naval Training Station at San Francisco reports in the *American Medical Association Journal*, of March 22nd, 1919, marked beneficial results from the use of a mixed prophylactic vaccine.

A noted contribution to this subject comes from Major J. Pratt Johnson, M.C., D.A.D.M.S., C.A.M.C., Director Clinical Research Laboratories, Johannesburg, South Africa, in the March, 1919, number of *American Medicine*. He has prepared a vaccine from one hundred and fifty virulent strains of M. catarrhalis, streptococcus, pneumococcus, streptococcus-mucosus capsulatus, B. Friedlander, B. influenzæ, B. septus, and staphylococcus, and used it freely not only prophylactically, but also therapeutically, against pneumonia complicating influenza. He says the results have been astounding. The mortality from pneumonia has been enormously reduced by the therapeutic use of mixed vaccines. One practitioner reported over one hundred cases and another two hundred cases of pneumonia treated with mixed vaccines without a single death.

During the epidemic, my own experience in the use of vaccines both prophylactic and therapeutic, was, I believe, much the same as the results given in this paper. A mixed stock vaccine was used, put up by Sherman of Detroit. At my first visit to a case of influenza, unless the type was very mild, a therapeutic dose was given to the invalid and preventive doses to the other inmates of the house. The therapeutic dose was given whether the temperature was high or subnormal. The earlier in the attack the inoculation took place, the less danger of pneumonia developing later. From October 17th to December 22nd, 1918, one hundred cases of influenza and twenty-three cases of pneumonia were reported to the health board, with one death, that of a five months' primipara, who nursed her husband through an attack while ill herself, and developed broncho-pneumonia (a light attack) and marked cyan-

osis before death. This was early in the epidemic before the dangers of a pregnant condition were recognized. Four other cases were lost during the winter—a chronic invalid, who developed pneumonia; a case who had double pneumonia and marked cyanosis when first seen, ten days after the beginning of the attack; a six months' primipara, who nursed her husband until ill herself, and then waited upon herself instead of calling upon the nurse with her bed-pan; and a case of pneumonia, with marked delirium and rigidity of the neck muscles, for whom neither vaccines nor medicinal agents proved beneficial. I am well satisfied that on the whole the combined vaccine used was beneficial both as a preventive and for curative purposes.

Prophylactically the mixed vaccine lessens the incidence of both influenza and pneumonia, and renders the disease less severe. Therapeutically it forestalls the toxæmia, and prevents complications.

Curative Treatment. General management. The things that count in the general management of a case are *absolute rest in bed* from the first, fresh air, and good nursing. The bad cases are those that persist in being around, or who are compelled to look after other members of the family, after they are themselves affected. Prophylactic and therapeutic inoculation may be unable to save such a one from the dangerous pneumonia. *Fresh air*: Let the windows be kept open from the first. And if there is any suspicion of lung complications, order the patient's bed brought as near to the open window as possible, and see that the order is carried out before you leave the house. When possible, put the bed in a corner of the room between two windows, kept wide open from top to bottom day and night. Of course see that the patient is provided with plenty of bed-clothing, with artificial heat inside the bed. As in ordinary pneumonia and tuberculosis, so here, absolutely fresh air is life-saving. *Good nursing:* Put a nurse in charge of a case early so as to conserve the resisting power of the patient, and besides, prevent other members of the family from becoming overfatigued. Without a nurse, one never knows whether or not their orders of vital importance such as clearing out of the primæ viæ, and the keeping up of proper nourishment will be promptly and efficiently attended to. All honour to the nurse, who throughout the recent dangerous pandemic was not afraid to work day and night, hand in hand with the physician, in their life-saving mission, to prevent the patient from drifting on and on, into hopeless, helpless, septicæmic cyanosis!

When called to a case, isolate the patient, arrange masks and hand washing for the attendants, and see that the sputum is properly taken care of. This last can be done by having bits of rags or paper, and a paper bag as a receptacle pinned to the bedside and later burned. See that a bed-pan is available. *Diet:* Give liquids entirely at first. A mixture of milk and lime water is good, one part lime water, two parts milk, of which the patient may take from six to eight ounces every two hours; or milk and raw eggs may be taken, an egg to a pint of milk, half the quantity every two hours. If the case is serious, see that the patient has nourishment at night as well as during the day.

Medicinal treatment: Clear out the digestive tract early with a saline cathartic, such as Epsom salts, preceded by fractional doses of calomel in case of vomiting, and repeat the saline each day unless contraindicated. Acidosis being usually present, alkaline treatment, I think, does as much good as any other, without doing harm. Some give both bicarbonate of soda, c.p., and citrate of potash, giving from seven to ten grains of each drug separately and alternately each hour. A third form of alkali is the lime water and milk. The treatment generally agrees well with the digestive system and the bicarbonate of soda has a tendency to gradually lessen the pains. When alkalies are administered, a somewhat smaller dose of the therapeutic vaccine is required. In view of the oncoming toxæmia and tendency to vaso-motor paresis, we must avoid the coal tar products as much as possible. Aceto-salicylic acid is usually given for the pains. *For the cough*, moderate doses of heroin (1/12 gr.) is given. *Insomnia* also may be treated by heroin, or a stronger opiate.

Circulatory failure. Some autopsies having shown disorganization of the adrenals, one would be inclined to recommend adrenalin chloride solution for cases showing vaso-motor paresis, and lowered blood pressure; and in two or three cases where used, I found it helpful in tiding over a weak spell. To combat the circulatory failure accompanying pneumonia, tincture of digitalis in five to fifteen drop doses every four, six or eight hours has been used a good deal, with or without alcoholic stimulants in half ounce doses. As in other diseases, so here, a dangerous toxæmic condition would appear to be an indication for free alcoholic stimulation.

I wish to draw attention to a condition of localized pleural effusion, which is sometimes the cause of continued high fever in pneumonia. The withdrawal by the needle of even a small amount of serous fluid in such a case, may start the patient on the road to

recovery. *Convalescence:* The patient should be kept in bed from three to ten days after the fever disappears, according to the severity of the case.

A good tonic for convalescence is one composed of quinine hydrochloride, one quarter to half a grain, dilute hydrochloric acid, about ten minims, tincture of nux vomica, five to ten minims, made up with essence of pepsin to one dram, given after meals.

The death rate from tuberculosis in 1918 continued to decline, the rate being 187·4 as compared with 188·9 in 1917. There has been a decrease in the annual death rate, without exception, since 1911, when the rate was 224·6 per 100,000. The reductions in the rate since 1916 have been much smaller than the preceding years: 1·3 per 100,000 in 1917 and 1·5 per 100,000 in 1918, as compared with 11·7 per 100,000 in 1912. Since 1911 the total reduction in the tuberculosis death rate has been 37·2 per 100,000 or 16·5 per cent. of the 1911 rate. One death in every six from tuberculosis has been either prevented entirely or delayed. The improvement in 1918 as compared with 1917 would have been much greater but for the last three months of the year. In the first nine months, the 1918 rate was seven per 100,000 lower than the 1917 rate; but for the last three months, the rate was 15·8 per 100,000 higher than the 1917 rate. The tuberculosis death rate usually drops considerably in the last quarter of the year; but in 1918, probably because of the influenza epidemic, the decline was slight in amount. Similar conditions are found in the figures for both the State and city of New York. There was some fear that war conditions would result in an increase in the death rate of tuberculosis, but apparently this has not occurred.

MENTAL TESTS IN PRACTICE

By A. G. Morphy, B.A., M.D.

Montreal

THE measurement of intelligence is difficult, because it is the attempted estimation either qualitatively or quantitatively of something not easily defined, of which our conceptions are more or less vague. We may try to define it by resolving it into component parts as we conceive them, or by considering it as the outcome of the harmonious working of various mental processes. Among the latter are included sensations, perceptions, records of past experiences, projected combinations of elements of visual and auditory imagery, comparisons of these elements of thought with one another and conclusions made therefrom. All these lie under the directing power of attention, and are influenced to a variable and unknown extent by emotion. Binet's method of trying to define intelligence was to make tentative assumptions as to its nature and try these out with tests. Terman, in his revision of Binet's tests, quotes Binet as having ascribed three characteristics to the thought process or summation of processes called intelligence, namely, the tendency of a thought process to take and maintain a definite direction, the capacity to make adaptations to attain the desired end, and the power of auto-criticism. But Binet was too broad in his ideas to limit himself to any single conception of intelligence, and accordingly designed his tests to turn the spotlight on the unknown quantity from many angles in order to estimate the strength, scope and readiness of various results of the thought processes. These, more or less different from one another, were specified as constructive imagination, time orientation, three or four kinds of memory, apperception, language comprehension, ability to compare concepts and see contradictions, ability to combine fragments of thought into a unitary whole, and ability to comprehend abstract terms and to meet novel situations.

Various tests for the measurement of intelligence have been devised, but the Binet-Simon scale (Stanford Revision) is gener-

Read at the fiftieth annual meeting of the Association, Quebec, June 26th, 1919.

ally admitted to be the best. It must be understood that Binet did not claim his scale to be a test either of the entire mentality, or of sanity and insanity, nor a test of the special adaptation of the mind to any field of thought, nor a test of the emotions, nor of moral delinquency; consequently any criticism of the scale must be directed to the scale in relation to that for which it was devised and nothing else.

Let us now look over some of the tests with an eye to their value in estimating different thought mechanisms.

Giving differences from memory—"What is the difference between a fly and a butterfly?" and two other similar questions. The test is one of judgement based on comparison of perceptions, with special regard to appreciation of essential differences. It is one of native intelligence, quite apart from school training.

Repeating digits backwards; a test of ability to manipulate mental imagery.

Ball and field test: A test of practical judgement, not depending so much on abstract reasoning and comprehension of language as other tests. In giving this test, I have been particularly impressed with the poor attempts made by feeble-minded subjects even of adult age to trace out a path sure to find the ball. Their minds either do not seem to grasp the problem, or else fail to find an effective solution of it.

Similarities: "In what way are wood and coal alike," "an apple and a peach," "iron and silver"? This test is one of the hardest for the feeble-minded, and in practice I have found it more difficult than the test for differences; in fact, the most frequent failure when any answer is given, is to give a difference instead of a resemblance. The higher thinking process is at fault, and the test is not influenced by school training.

Detecting absurdities: This test is little influenced by schooling; ideas are compared with one another and the critical faculty is brought into play. A most valuable test for the higher grades of mental deficiency.

Reading test and recalling sight memories, that is, recalling sight ideas from sentences read. The chief value of this test is the opportunity afforded the examiner of judging the subject's power of comprehension of what he is reading during the time of reading and his power of recall of ideas. That the test is largely dependent on schooling is undeniable.

Naming sixty words in three minutes: Terman claims that this tests power and rapidity of association and discloses poverty

of associations in retarded subjects. "Language forms are the shorthand of thought." But there is no doubt that schooling through continual use of words used in different studies plays a large part in success in this test.

Abstract words as, "pity", "envy", "revenge", "charity", "justice". Comprehension of the meanng of such abstract words involves higher thought processes, namely the association and comparison of concepts of qualities common to groups of previous experiences. Terman says, "There is hardly any test in which twelve and fourteen year old intelligence more uniformly excels nine and ten year old intelligence."

Interpretation of fables is a test of generalization, of ability to understand underlying motives. It can easily be imagined how frequently feeble-minded or backward children would fail in this test, especially moral delinquents. A mind of certain standard or above it has the power of generalizing from concrete instances, no matter whether schooled or not. It is a matter of common knowledge how many shrewd people there are in this world who have had very little school and no college training, but whose sagacity is proverbial. In common parlance, they can see through a stone wall or round a corner. Not only have they a vigorous power of generalizing from concrete instances, but they have that somewhat vague (to men at least) quality of mind called intuition which seems to be a rapid summing up and comparison of concepts summoned from unrealized depths with conclusions drawn therefrom. On the other hand, there are many people of higher education—but let us not unveil the converse. "Much learning hath made thee mad." Surely, if any mental test deserves to be ranked as one of the best in estimating general intelligence, the fable test is that one.

In reversing the hands of the clock and in the box test, success depends upon the power of manipulating visual imagery. Using the code requires close attention and steadiness of purpose, what may be described as dynamic form of mental power and may be open to criticism as a test of general intelligence because this particular application of mental energy may easily be improved by practice.

The tests for superior adults need not be considered here. Anyone, however, who may wish to have an half-hour's entertainment, can have it gratis and seated comfortably at home by putting himself through them, the only condition being that he shall examine and judge fairly.

A review of these few tests cited at random from the scale will, I think, show that each test fulfils the purpose for which it was designed; and the same holds with regard to the remainder of the tests, although it is admitted that the tests have not equal value. Binet himself is alleged to have considered certain tests more diagnostic of intelligence than others, namely, the following six:

Arranging weights.
Comprehending difficult questions.
Using three given words in a sentence.
Defining abstract terms.
Interpreting pictures.
Giving rhymes.

It is noticeable that no memory tests are included in this list.

Brigham, in his article on the diagnostic value of the Binet tests, gives results of investigations with regard to the relative value of different tests. He gave the tests to two groups of school children, one of which had progressed only half as far in school as the other, and was presumably composed of less intelligent children. The briefest possible summary of his results may be given as follows:

Test	Percentage passed by Normal	Percentage passed by Retarded
Repeating five digits	100	98
Using three words in a sentence	79	56
Comprehending difficult questions	70	20
Detecting absurdities in statements	95	42
Defining abstract terms	59	8
Reconstructing dissected sentences	100	29

Brigham concludes that the diagnostic value of six tests, namely, comprehending difficult questions, reconstructing dissected sentences, detecting absurdities, defining in terms superior to use, defining abstract terms and solving problems, is high, while on the other hand, certain memory tests, descriptions of pictures, counting stamps, and other similar tests are of low diagnostic value.

Many criticisms of the Binet and other methods of measuring intelligence have been made not only on general grounds, but with particular reference to details.

Porteous, for instance, assuming that there is a marked cor-

relation between character and intelligence and that both should be measured, declares that a child displaying heedlessness, carelessness, inability to allow thought to precede action and of infirm temperament, may be glib tongued, quick-witted, and may appear brilliant as regards educational attainments with good record in school examinations and Binot and Simon tests. So he designed his maze tests in the endeavour to test the qualities of prudence, foresight, and ingenuity.

Higgins says that psychologists are beginning to believe more in performance tests with cubes, cylinders, etc., and that it is surprising how frequently a high grade moron shows mature judgement in dealing with generalities but is at sea in their practical application. He finds the value of the Binet scale greatly enhanced by the Stanford Revision, but questions its value in detecting the high grade moron.

Fernald contends that the Binet test does not register as defective certain persons who present plain evidence of mental defect in their personal history, school history, performance, etc.

In answer to the above opinions, it may be said that as yet no better scale has been devised, and that the results of mental tests should be interpreted in the light of all other data, such as physical health, social condition, language, conduct.

Binet's principle of grading intelligence according to age has been assailed on the ground that it assumes unjustly that intelligence is correlated with age, and that the individual tests correlate with both intelligence and age. In reply it may be said that while it may be granted that intelligence does not grow at precisely the same rate in all children any more than their physical stature does, it is many-sided, growing unequally in different respects to a limited extent and that the elasticity of the Binet scale permits it to cover these inequalities and strike a series of averages. I think it may be safely assumed that the individual tests are correlated with intelligence, and as regards their correlation with age we cannot do better at present than to accept Terman's conclusions based on averages drawn from tests of two thousand children.

Binet's "all-or-none" method of counting has also come in for serious criticism, and superiority for the Yerkes-Bridge point scale in this respect has been claimed. The latter may be described as a series of tests arranged roughly in order of difficulty but not divided into age groups, and to each test a certain value in points is attached, the sum of values being 100. The final score is compared with a "norm" which is a variable quantity, allowance being

made for environment, training, etc. It is difficult to see how reference to age can be avoided, and it would seem that the method of recording partial successes is more accurate than the "all-or-none" method. But it may be said in reply that Binet uses the method of partial scoring by using the same test in different grades of difficulty at different ages, for instance, memory, interpretation of pictures, weight discrimination.

Binet's method of finding the mental age is confessedly arbitrary, but is a practical and easy method, whatever its faults, and must stand until a better is devised. Details need not be given here, as a complete description is given in Terman's book on the Stanford Revision.

Any test may be unjustly criticised, the real fault lying with the examiners. An examiner needs the following qualifications: familiarity with directions for giving tests and with the rules for interpreting responses, ability to adapt procedure in testing to special instances and to adapt himself in attitude to the mental level of children of different ages in order to obtain their best efforts, and a general appreciation of the necessity of adhering strictly to all rules of testing and of careful work.

Finally, it must be borne in mind that any measuring scale is in fact only a convention adopted for practical purposes and should only be used in connection with a complete study of each case, including all obtainable data, medical, educational, and social.

The association of moral delinquency with mental defect can only be mentioned here and not discussed. Pratt, of Toronto University, reporting conclusions drawn from results of clinical studies of nearly 1,500 pupils in the public schools and of several hundred children examined in the Toronto General Hospital, says: "I think the tests are invaluable for the purpose for which they were constructed. If it is understood that their function is limited and they are not pressed into service for which they were never intended, they can be of great practical aid in psychological investigations. The tests are almost unerring in diagnosing the class of the definitely feebleminded and distinguishing them from normal children. The fact that they are so little dependent upon technical school training and are designed to appeal to the ordinary common sense and practical intelligence of a child, accounts for their utility. They furnish a definite percentage (I.Q.) which can be used when, for example, the Judge of the Juvenile Court asks for exact information about the delinquent's mentality. Where the tests are lacking is on the emotional and moral side. They need to be supple-

mented by social data derived from the home, the playground, and the family history. They are not tests of insanity or criminality as such, but are of great value when in addition to the above abnormalities mental defect is disclosed. I think that any investigation into the correlation between mental defect and moral delinquency must be based upon a thorough and scientific use of such tests as the revised and developed form of Binet and Simon."

BIBLIOGRAPHY

BRIGHAM.—"Psychological Monographs," Vol. xxiv, 1917.
PORTEUS.—*Jour. Ed. Psychology*, Jan., 1918.
FERNALD.—Quoted by Brigham.
YERKES-BRIDGES.—"A Point Scale for Measuring Mental Ability."
HIGGINS.—*J. A. M. A.*, Jan 12th, 1918.
YERMAN.—"The Measurement of Intelligence."

THE treatment known as heliotherapy in tuberculosis has proved a marked success, not only in that of the bones and joints, but also in the pulmonary form. The treatment is simply exposure to the rays of the sun in the open air. Dr. A. Rollier's establishment at Leysin, near St. Moritz, Switzerland, has been famous for several years. There he has treated upward of one thousand five hundred patients with phenomenal success. This is in mountains high above the sea level, but the same treatment is equally successful on the sea shore, as is proven by its results at Bereck-Plage, Hyeres and Cannes. Sunlight is the essential part of the treatment, and the best place is where most sunlight is to be found. Dr. Albert Rollin, in his work on tuberculosis, speaks of the intensity of the luminosity of sea air and the power of radiation on the beach.

Sunlight has been found also to be one of the best cures for torpid wounds, gangrene, frost bite and other similar lesions. It is not the heat in the rays that is beneficial, but the blue and violet rays of the light, which, with invisible ultra violet rays, constitute chemical rays, which are strongly bactericidal. Sunlight is not merely bactericidal; it is a powerful stimulant to every function of animal life.

WAR SURGERY

PERFORATING GUNSHOT WOUND OF THE FACE WITH EXTENSIVE DESTRUCTION OF THE SUPERIOR MAXILLÆ

By J. N. Roy, M.D.

Physician to the Hôtel-Dieu, Montreal; Laureate of the Academy of Medicine of France

IN publishing the following observation, I desire, in the first place, to give testimony of the very appreciable services which the dentists rendered to the surgeons throughout the whole period of the recent war, in relation to those operations necessitated by wounds of the jaws. As I have already shown in two previous papers*, the experience which has been gained, during the last five years, has proved that in restoring any injury located on the lower part of the face, the co-operation of our confrères engaged in the profession of dentistry, was almost indispensable. Left to his own resources, the surgeon would often find it impossible to give to the patient the most judicious treatment. If he attempted to do everything alone, the æsthetic or functional results, in most cases, might leave much to be desired. The case of the wounded soldier, who is the subject of this paper, is a convincing illustration of this fact, as I will proceed to demonstrate now.

Case report. Captain E. C.†, twenty-six years of age, belonging to an infantry regiment, was brought under my care, at the Canadian Hospital at St. Cloud, on April 26th, 1916. He was suffering from a large wound of the face, having, on April, 16th, at Verdun, been struck by a bullet which had apparently been reversed in its cartridge casing, and was fired from a distance of about twenty metres. The manner in which the officer's face was shattered, and

*J. N. Roy. "Quelques cas de labioplastie." *L'Union Médicale du Canada*, Avril, 1919.

J. N. Roy. "Le traitement chirurgical des fractures du maxillaire inférieur." *L'Union Médicale du Canada*, Juillet, 1919.

†This officer, while under treatment, was shown to the Inter-Allied Dentists Congress, held at Paris in November, 1916.

Fig. 1

Fig. 2

Fig. 3

Fig. 3

Fig. 5

Fig. 6

the fact that bullets reversed in their cartridge casings were found in trenches subsequently captured from the enemy, led me to believe this conjecture was most probably a true one. The projectile entered the man's left cheek, inflicting a vertical wound, half-open, about five centimetres long, and having the malar bone at the upper extremity. After having almost wholly destroyed the superior maxilla, the bullet passed out on the right side, at junction of nose and cheek, causing considerable disfigurement. The maxillary sinuses, the turbinated bones, and the nasal septum, were demolished, leaving nothing but a great single cavity. The bones of the nose were fractured, and this organ, having no longer any support, had already begun to sink in, being drawn towards the right side. Two-thirds of the left side of the roof of the palate had been destroyed. The three molars, attached to the only remaining portion of this maxilla, were still wedged on the right side, and this bone, broken away from its surroundings, was dragging on the tongue. The upper lip, which was split near the middle, had no nasal contact on the right, but hung on the lower lip, at the point where the two lips join. Up above, the region of the lacrymal sac was likewise injured, and the patient complained of diplopia. Apart from this trouble the vision of each eye was excellent, and the floor of the right orbit was intact.

The condition of the lower maxilla was normal.

The ears, fortunately, did not suffer from any of the effects produced by the trauma.

The wound suppurated freely, and the patient, very weakened, had a little temperature.

I proceeded to sterilize this wound, as quickly as possible, by removing the loose splinters, by irrigations and buccal pulverizations frequently repeated, and with dressings renewed twice a day. Tonics and a generous diet aided the local treatment so well that I decided to proceed to surgical treatment, at the beginning of May. (See photograph No. 1, taken on May 8th.)

The first operation took place on May 10th. After administering anæsthetics and completing the preparations ordinary to all operations, I scraped as thoroughly as possible, with the curette, the wound on the left cheek. I then sutured the skin after having carefully loosened and freshened the edges. The drainage being good through the mouth, union by first intention resulted. In order to gather up and hold together the fragment of the maxilla, which was hanging on the tongue together with the three teeth, I had

before commencing the operation, ordered a metallic crown which fitted to the head, and rested solidly on the superciliary ridges.

After all the splinters of bone had been scraped away and removed from the cavity, between the mouth and the right side of the face, a Reverdin needle, passed through the wound, at the gingivolabial junction, was armed with a brass wire, the inner of which encircled the fragment of the maxilla. In order to avoid cutting the surrounding tissues, I passed this wire, after gently twisting it, into an india-rubber tube. I then drew it up, and after putting what remained of the superior maxilla into its position, I attached the brass wire to a hook which formed part of the frontal metallic crown. The three teeth coaptated well with the corresponding molars of the inferior maxilla, and as a result, and by means of appropriate dressings, I was able to control the retracting cicatrice, and obtain perfect and definite dental contact. Then I sutured the upper lip, the ala of the nose and the region of the lacrymal sac. There still remained a large opening at the side of the nose through where I could make aseptic irrigations, dressings, and watch the healing of the tissues.

Post-operative recovery was quite normal, and on May 22nd, I removed the brass wire, the fragment of the superior right maxilla having by that time become adherent to the surrounding tissues. However, that fragment, consolidated by portions of osseous lamellæ, presents such an elasticity that probably it will be impossible, in the future, to apply a prosthetic apparatus thereto.

The wound on the right gradually contracted, and the suppuration diminished from day to day.

The patient having previously suffered from influenza, he developed an otitis on the left side on June 19th. This otitis, very acute, necessitated a paracentesis, and was complicated by mastoiditis. By the application of ice, and proper dressings, the officer's condition improved, and there was a complete cure by July 28th.

Gradually the nose, no longer having any supports, sank in and deviated to the right, being drawn into the interior by the cicatricial tissue. (See photographs 2 and 3 taken on September 20th.)

Diplopia had now entirely disappeared.

Suppuration ceased, healing of the wound followed its ordinary course, and in September, the fragment of the superior maxilla had consolidated in the manner previously described. The opening at the side of the nose had now diminished to a narrow fissure.

In order to place the nose in its normal position, and maintain it there after the operation, I asked Dr. Geo. Villain, professor at the Dental School of Paris, who was attached to my department in the quality of chief of the technical service, to make a prosthetic apparatus which would be capable of taking the place of the superior maxillæ, and the nasal septum, that is to say, an anatomical support for the nose. Thanks to his great skill and ingenuity, Dr. Villain succeeded in constructing an ideal instrument of which he has been good enough to furnish me the following description:

"Seeing on the one hand, the almost total loss of the superior maxillæ, and on the other hand, the slight resistance of the fragment which remained consolidated on osseous lamellæ, it was not possible to find, on these maxillæ, any point of solid support for the construction of a skeleton apparatus. Neither would the inferior maxilla serve as a point of support, on account of the great mobility of that bone. It was therefore necessary to choose a more stable place to obtain the desired purpose. The direction, inner and outward, of the cicatricial forces, which were very powerful, would not permit the utilization of an apparatus which would take the skull as the sole point of support against these forces.

"Inspired by the method extolled by Kazanjian, I constructed a frontal plate in vulcanite, moulded on the forehead, and grasping, as firmly as possible, on the superciliary ridges. A vulcanite splint, attached to the lower teeth, was connected to the frontal plate with sliding lateral tubes. Thus given absolute rigidity, the apparatus was a marvellous anchorage, and one which would support considerable force. The inferior maxilla, having a slight mobility, could move up and down within a radius of several millimetres in the splint. Moreover, to guard the patient against fatigue, the sliding lateral tubes allowed one at will to increase or decrease the fronto-maxillary distance; two small screws fixed the apparatus at the height desired. To push over the nose, and maintain it in its proper position, after liberating the cicatrices, I utilized two metal rods which were each bent at a right angle from its extremity. One extremity was folded in the shape of a U, and thrust into a small vertical tube which was soldered to the sliding lateral tube, and the other extremity, covered with gutta-percha, was destined to penetrate the nostril, in order to keep the nose in its normal position.

"Thus disposed of, the rods were capable of being drawn by sliding them vertically up and down. This gave the surgeon proper facility for the antiseptic treatment of the mouth and nose. In addition, it gave play to a certain elasticity which prevented erosions of the mucous membranes of the nose.

"On the lower splint, two horizontal tubes were provided to receive a labial skeleton of tin, to be used when the time would arrive to proceed to the labioplasty. Thanks to a special provision, this plate will serve not only to support the lip, but also to dilate it."

The apparatus completed, I proceeded to the second operation, which took place on September 23rd.

Chloroform having been administered to the patient, I made an incision through the whole cicatricial tissue, from the root of the nose to the lip inclusively. The nose having been completely separated, as far as the point between the eyebrows, it was easily drawn out. Although the bones were fractured, they still adhered to the nasal pyramid, and were carefully preserved for the later purpose of serving as a solid point of prosthetic support. The apparatus was then placed in the mouth and on the forehead, and two metal rods, with a covering of gutta-percha at their extremity, were introduced in the nasal fossæ, maintaining the nose in its normal position. I made two sutures at the upper part of the wound. Definite restoration of the lip was naturally left for a third operation. (See photographs 4 and 5, taken on September 25th.)

The results of the intervention were excellent. Irrigations and antiseptic dressings were made daily, and particular attention was paid to nasal nutrition. From time to time, the nose changed color, turned from white to red, or became swollen. I corrected this trouble, which was one of circulation, by modifying the prosthetic rods which had their point of support in the nasal fossæ, and more or less compressed the surrounding tissues.

Towards the end of October, as nutrition of the nose seemed to be satisfactory, I decided to repair the upper lip. As, however, the metal rods, placed in the nostril were in my way, I asked for such modification of the first apparatus as the exigencies of the operation necessitated. My excellent friend, Mr. Bouillant, chief of laboratories of Military Dispensary No. 45, took charge of this delicate work, and replaced the skeleton rods by a nasal supporter introduced at the part of the roof of the palate which had been destroyed. This supporter, destined to assure a sufficient but not compressive support, was capable of expanding the tissues, and so prevent cicatricial retraction. It was mounted on three metal rods, penetrating the tubes included in the depth of the lower splint, and it could be easily dismounted. The nasal part was formed of a soft elastic pad hooked to the apparatus, which rendered its replacement easy. The pad was thrown forward by means of a nut

manœuvring on the central rod, and came into contact with the lower part of the bone of the nose, which was now in excellent position.

The third operation took place on October 31st.

Chloroform was again administered and, aided by my excellent comrade and friend, Major Chs. Saint-Pierre, the patient was carefully prepared with a view to autoplasty. I detached entirely the bundle of flesh which formed part of the upper lip, and proceeded to a minute ablation of the cicatricial tissue. The lip, which had been torn to within two centimetres of the commissure, was liberated, in following the line of the traumatism. The left part was then freshened up, and as it was somewhat retracted, I made a horizontal cutaneous incision, and a slight dissection in a manner to augment its depth. The two extremities of the labial mucous membrane were sutured with silk, after having been given a little outward turning. There still remained to be filled up more than one half of the upper lip. In order to accomplish this, I cut a flap from the cheek and neck, about eight centimetres long and three centimetres wide, in continuing the first incision near the commissure. This flap partially detached, had then its pedicle under the right malar bone. It was carefully coapted with the lip from the left side and at the labial mucous membrane, which had been previously sutured, and put into place. The prosthetic apparatus furnished an excellent point of support, and prevented retraction. After having loosened the skin on the chin, neck and cheek, it was easy to completely close up the wound caused by taking off the flap. A light compressed dressing terminated this operation of labioplasty.

The outcome of the operation was again satisfactory. On account of abundant buccal secretions of a nature likely to cause complications, I ordered that irrigations and dressings should be made every day. The flap was well nourished, it adhered to the surrounding tissues and maintained its physiological color. The labial mucous membrane, on the right side, encroached for the moment on the skin to which it was sutured. Later, when the cicatricial work will have produced its effect, it will be an easy matter, if the thing persists, to correct this asymmetry by a simple intervention.

The nose presented no inflammatory reaction, and kept its normal appearance as regards its prominence.

The wound on the cheek and neck healed by first intention, and

left a cicatrice that can hardly be seen. (See photograph 6, taken two days after the operation.)

Owing to my departure from France for England, I must unfortunately bring this observation, which is personal to myself, to a close, with this last operation. It remained for me, in the future, to cut the pedicle and fill up the wound, at the junction of the nose and cheek, by means of a flap taken from the right side of the forehead. I would not have been justified in performing that operation at the time of the third intervention, in view of the presence of the septic secretions, and the necessity to watch the vitality of the flap, vitality being always problematic in this kind of surgery.

The patient was removed to another hospital, and there he underwent, with complete success, the remainder of his operative treatment. A definite prosthetic apparatus, taking its point of support on the lower dental arches, was made to replace the superior maxillæ which were destroyed. Furthermore, that prosthetic apparatus provides a stem for the nose which it maintains in an excellent position without the aid of any external facial support.

The patient has grown a moustache, and the æsthetic result achieved is as perfect as is reasonable to hope for. Captain C. is highly satisfied with the results obtained, and at the end of 1917, he was able to rejoin the army, and take up duties on the headquarters staff of an infantry brigade. Judging by his present appearance, nobody would be able to realize the vast disfigurement of the face presented by this officer after his glorious wound.

RETIRING PRESIDENT'S ADDRESS

By R. Ferguson, M.A., M.D.

THE year during which I have had the honour to preside over this council has been a strenuous year, and some of the questions which engaged our attention unfortunately still remain unsettled. Chief among these questions are the many issues raised by the report of the Royal Commission. Although that report has been in the hands of the government for over two years, no legislation based thereon has yet been broughr before the legislature. Pending the submission of the new Medical Bill, the executive committee, appeared before the government on several occasions since our last session and presented our views in the interests of medical education, and the protection of the public against charlatanism.

The council having thus far done its duty in the premises, it is a question whether we should further prosecute these subjects before the government or leave the responsibility of the issues with our legislators, after the example of the Ohio State Council. However, at the close of the recent session of the legislature, the timely interference of your representatives averted the passing of such legislation as would have rendered the authority of the medical council abortive and nullified its very existence. This Bill, we were assured, was an eleventh hour measure hurriedly compiled under a misapprehension of the views and attitude of the medical profession. In consequence of our timely protest, it was promptly withdrawn. The incident was the occasion of an assurance that whatever medical legislation might hereafter be proposed, the representations of the medical profession would receive first consideration. The council was moreover asked to formulate a series of recommendations at this, its next meeting, for the guidance of the government in framing a medical bill at its next session. Under these circumstances I would recommend that a special committee be appointed forthwith, for that purpose, or that the matter be referred to the legislative committee.

Delivered before the Ontario Medical Council, Toronto, June 24th, 1919.

Medical Education

It does not appear to me that the council has been as progressive as it might have been in respect to medical education. Time was when the universities were put upon their mettle to make their curricula measure up to the requirements of the council. Now, however, the universities set the pace, whether too rapid I do not say, and the council is content to follow that lead. The curriculum of the College of Physicians and Surgeons is antiquated. For example, the examination requirements of the council state that the work on the various subjects shall consist of from one to three courses, covering from fifteen to thirty teaching weeks. These specifications mean nothing unless the number of hours allotted to each subject is specified. I endeavoured more than once in committee to have this defect remedied, but failed from lack of support.

The council has been lacking in initiative in medical education. For instance, two of the universities of the province have adopted a six-year course of study, and the third is, I believe, considering its adoption. This movement was never even discussed by this body, nor was any influence whatever brought to bear upon the subject. If the council had raised the standard of matriculation, as it should have done, there would have been no occasion for a sixth year. Senior matriculation with the science option, would have covered the subjects of chemistry, physics and biology, which are at present loaded on the medical curriculum. With the elimination of these subjects, the student would bring greater maturity to bear upon his work, and the early part of his course would not be occupied with subjects which are properly pre-medical. The council should have taken part in the settlement of this question. If it relegated the pre-medical subjects to the arts and collegiates where they belong, the medical colleges would have been satisfied with a five-year course, and they would have been relieved of the necessity of providing an unduly long course of medical study, while the energies of the students would have been concentrated upon work essentially medical and practical.

The executive has had a considerable number of applications from "overseas" students for matriculation standing and special licenses. These applications have been dealt with in a spirit of generosity in so far as they came within the "war-time" concessions recognized by the council. With the advent of peace conditions,

the council will doubtless again adhere strictly to normal regulations, and aim at the maintenance of a high standard of medical education.

The Relation of the Council and the Universities

An effort has been made from time to time by the provincial university to have the examination of that body accepted by the College of Physicians and Surgeons as a licensing examination. In my judgment the council should never give up the control of the curriculum and its own independent examinations. As a matter of fact, a reasonable concession has already been made to the universities in the acceptance by the council of all the university examinations except those in the three major and practical subjects of medicine, surgery, and obstetrics, and diseases of women. The council is the one agency which through its curriculum can standardize the work of the universities, and conduct a licensing examination wholly disinterested, and possessing the essential of independence. This, in effect, was the conclusion reached by the Royal Commissioner in his investigation. The present system is working very satisfactorily, and any interference therewith would inevitably lead to disintegration and discord.

Reciprocal Relations with Candidates Outside the Dominion

At the 1916 meeting of the council, a memorial was received from the University of Toronto regarding the discrimination involved in exacting one year's attendance in case of candidates outside the Dominion, otherwise eligible for our licentiate examinations. This memorial arose from a protest raised against this restriction by the education committee of the American Medical Association. After due consideration the education committee of this council recommended the elimination of this provision, and the recommendation was adopted without dissent by the council. The profession generally congratulated us on the removal of an obnoxious barrier from the regulations, and the officials of the American Medical Association expressed appreciation of our action. Nothing further was heard of the matter until a year ago, when the education committee quietly restored the provision, and it went through the council apparently without consideration or discussion. I realize that I am making a belated protest about this matter, but I am convinced that the restoration of this provision was a

very reactionary step, and out of keeping with the spirit of international fellowship that should obtain in these days among allied peoples, in matters ethical as well as political. It would do the council credit now to revert once more to its former attitude upon this subject and to remove this insignia of narrowness and provincialism from our regulations.

The question of reciprocal relations with "accredited colleges" in the United States has been dealt with in rather a niggardly spirit. Not satisfied with the acceptance of "Class A" medical colleges, our regulation sets up the limitation that only such colleges shall be acceptable the standards of which are equivalent to the standards of this council. We have no adequate means of comparing standards, and the classification of American Medical Colleges by the Council of Education of the American Medical Association is the only sane standard to adopt. Our regulation savours of pettifoggery.

The Workmen's Compensation Act

Some of the regulations of the board, rather than the act itself, is a source of considerable dissatisfaction to the medical profession. The schedule of fees to which this council a year ago gave a qualified approval as being "upon the whole satisfactory" is quoted in Form 92 of the board as "approved by the College of Physicians and Surgeons of Ontario". The resolution of the council states that the schedule is "upon the whole" satisfactory, implying that in some respects it is not satisfactory without qualification. The schedule, as amended a couple of years ago, is doubtless an improvement upon the original schedule, but it still contains some unwarranted restrictions. For example, under "Anæsthesia and Assistants", Form 92, the regulations of the board provide that at operations a doctor may administer anæsthesia *only* when a house surgeon is not available; and that an assistant can be employed *only* when considered necessary by the board. Every doctor knows that oftentimes the duties of the anæsthetist are more critical than that of the operator; and if under the regulations the operator is obliged to utilize, it may be an inexperienced or an unlicensed house surgeon, then the board and not the operator should assume the risks attending the administration of such anæsthetic. With reference to the employment of an assistant only when considered necessary by the board, such a regulation is absurd, as in the great majority of cases it is impracticable to consult the board prior to

an operation. These restrictions are entirely unreasonable, and should apply only in cases where such privileges are abused.

The government at the last session of the legislature made a very sane amendment to the act, viz.: the abolishing of the one month's limitation for the compensation of medical services. This provision was so palpably unjust that the wonder is how it ever became incorporated in the act. Your president took up this matter with the government by personal correspondence in the absence of any opportunity of getting a committee-conference on the subject. The Board of Compensation itself, and many of the employers, went on record as opposed to the limitation imposed by this provision. There is one feature of the recent amendments to the act, that is decidedly unfair to the physician, viz.: that while an appeal from the decision of the board is permitted in disputed accounts, that privilege is nullified by the rider that "no costs" are allowed the appellant even when the appeal is sustained.

The Ontario Temperance Act

The abuse of the privileges of the Ontario Temperance Act has been a source of chagrin and discredit to the profession. This subject was the occasion of a conference between the government and the representatives of the council. Neither the civil courts nor the council has been able thus far to cope adequately with this abuse. Some improvement is anticipated under the recent amendments to the act. Several cases I understand will come up before this session of the council in which the suspension or cancelling of the licenses of the offenders will be recommended by the discipline committee. The adoption of the recommendation will doubtless have a salutary effect. For the year ending April 30th, 1919, there were seventy-three prosecutions against forty-six doctors under the Ontario Temperance Act, resulting in fifty-eight convictions against forty doctors, the fines ranging from $10 to $1,200. Six convictions were obtained against one man, four convictions against three others, three convictions against another, and two convictions against two others. In view of this damaging record before the courts, the discipline committee would appear to be charged with serious disciplinary duties. It will never do for this council to confine its zeal to the prosecution of charlatanism outside the ranks of the profession, while men within the profession are permitted to besmirch its reputation by wholesale trafficking in liquor prescriptions.

In this respect the reputation of the profession is largely in the keeping of the disciplinary committee.

Notwithstanding its alleged shortcomings, however, some of which I have not been slow to criticize, and in spite of the hostility of the critics, some sincere no doubt, others merely captious, yet the Ontario Medical Council has a long record of usefulness to its credit; and after an existence of over half a century, it stands to-day as our most potent agency in maintaining and regulating the standard of medical education in this province, and in safeguarding the public against fads and charlatanism in the field of medicine.

Dr. George D. Porter, of Toronto, presented the secretary's report for the year of the Canadian Association for the Prevention of Tuberculosis at its nineteenth annual convention, held on October 9th. Dr. Porter referred to a number of new sanitoriums and other institutions for the treatment of tuberculosis established during the year, and among them the new $250,000 Laval Hospital at St. Foye, Quebec; the Rotary Institute for diseases of the chest, opened in Vancouver; a large provincial institution in Alberta; a new hospital for curable diseases in Montreal; and new babies' wards at the I.O.D.E. Preventories in Toronto and Saskatchewan. Important measures have been taken by the Department of Agriculture to guard against the contamination of milk. Great advances have been made by the Department of Soldiers' Civil Re-Establishment in providing, in conjunction with the University of Toronto, a research department for the carrying out of serological tests on both military and civilian cases. Educational posters and pamphlets have been distributed by the Association, which has actively co-operated with the provincial departments of health and other organizations in this important work.

MENTAL EXCITEMENT IN A PSYCHOPATHIC HOSPITAL—ITS PREVENTION AND CARE

By Nursing Sister Elizabeth Mills, C.A.M.C.

Cobourg Military Hospital

THE diminution of noise and mental excitement in a psychopathic hospital is a very important and practical problem which goes to the root of many difficulties connected with the management of the insane. It is universally accepted that in any institution of this kind the amount of disturbance should be reduced to a minimum, and the extent to which this has been accomplished may be taken as an index of the good management of the hospital. The difference between the state of the "Bedlams" of the past and the mental hospitals of the present day, is largely the result of better methods of securing that quietness which is indispensable for the successful treatment of patients. Since consideration of prevention is inseparable from that of causation, our starting point is clearly indicated: we shall refer to several specific factors which are most commonly present to break that peace which should be characteristic of any institution devoted to the treatment of mental disease.

One of the chief causes of disturbance is mental excitement of the patients. This excitement may be either of two kinds. There is, on the one hand, the mental excitement due directly to disease, as of the person suffering from the delirium of an acute toxic psychosis, which is an essential excitement caused by some abnormal stimulus arising within the body; in many cases, no external sense impressions reach the patient's consciousness, and this is therefore amenable only to treatment which has an effect on the disease itself. Obviously the control of such excitement must be left to the medical officers, the nurse's only duty being to report its occurrence immediately and execute the physician's orders. Such cases are comparatively rare; in fact, in the Cobourg Military Hospital, not more than six cases coming within this category can be found in our wards at any one time.

There is, on the other hand, the mental excitement which is

the reaction to some irritation in the environment acting on patients sensitized to irritation. This may be called non-essential excitement; it is temporary and paroxysmal in character and naturally subsides with the removal of the irritation. It is this preventable excitement which causes by far the greatest proportion of disturbances in our wards and its prevention and control devolve chiefly not on the medical officers, but on the nursing staff. The best means of influencing this kind of excitement lies in the discovery and removal of the source of the irritation. A well directed attempt to grapple with this problem will test to the utmost the originality, resourcefulness and powers of observation of the mental nurse. However, the reward is great and the benefits follow so speedily that the relationship between cause and effect is obvious to all.

The sources of avoidable irritation to patients are innumerable. Demented individuals, like infants, when restless and troublesome, are usually suffering from some bodily discomfort. We have known such patients to become quiet after the relief of a distended bladder or rectum, a gastric lavage, the extraction of decayed teeth, the removal of an ingrowing toe-nail, or surgical attention to a suppurating ear. Night nurses have maintained quietness by giving a drink of warm milk, a soda biscuit, or a little tobacco to their charges. Numerous other ways of sparing the feelings of excitable patients and sheltering them from a multiplicity of irritating stimuli will occur to any thoughtful nurse who studies the habits and environment of her patients. It is obvious that such discriminating enquiries cannot be carried out in an atmosphere of turmoil and confusion, wherein abnormal physical conditions are almost certain to be overlooked and misunderstood; the nurse responsible for the treatment of mental excitement under the latter conditions is merely groping in the dark.

Every noisily excited patient should at once be placed where he cannot disturb his fellow patients; therefore, provision has been made in each ward for a partially isolated room to which the disturbed sufferer can come accompanied by one or more nurses to administer suitable treatment until calmness is restored and the danger of inflaming the others has passed. At the same time, measures directed towards the improvement of the general health of the patient and which operate indirectly to reduce the severity of mental symptoms must be undertaken; the more serious cases are prescribed treatment in the continuous bath, or some other form of hydrotherapy; the dietary must be generous—the ration issued in the main dining room having a food value of 4,200 calories

with over 160 gms. of protein; special and extra diets are provided where indicated and whenever possible occupational treatments and amusements are given in the open air. Such measures, in the vast majority of cases, produce the necessary calmative effect, thus making it unnecessary to employ chemical hypnotics and sedatives with their well-known deleterious effects.

The Cobourg Military Hospital, being organized on the so-called "non-restraint" system, seclusion and mechanical restraint are prohibited by the standing orders of the Officer Commanding, and all methods of a harsh, intimidating or repressive nature are vigorously proscribed. Coercive measures, we have learned, lay the foundation for future irritability by engendering a spirit of antagonism towards the hospital and resistance to its therapeutic agencies. Undesirable accidents such as destructive episodes, violent outbreaks, suicides and escapes are prevented by a close but unobtrusive supervision of each individual patient; doors to all dormitories occupied by patients are therefore kept open except when a nurse or orderly is in attendance. Every precaution is taken to foresee and avoid situations which might lead to violent conduct.

There is no doubt that women nurses, though they cannot command effectual physical means of controlling them, manage mental patients with less irritation and fewer outbreaks than occur when male attendants are in charge. Nursing sisters in this hospital are almost ubiquitous. They are found not only on all wards both by day and night, but if the visitor passes to the dining room, the recreation hall, occupational therapy groups on the lawns; in fact, to any portion of the premises where there are patients, he invariably sees one or more nursing sisters directing the operations and watchful for ominous symptoms. Those who feel that the insane will take advantage of the milder methods of treatment, little appreciate the power a well poised properly taught expert nurse can exercise by calm persuasion and mental suggestion. Ward disorders can be more easily prevented by the judicious words of a quiet, self-possessed gentle-toned woman nurse than by the threats and stormy commands of an angry orderly.

The following brief case summary serves to illustrate the difference between the modern treatment of the mental case and the older methods:

Private C. was admitted to this hospital from a convoy. His documents showed that he had made an attack on an orderly in an asylum, and he was described as homicidal; information was given

that on account of his violent and destructive propensities, it had been necessary to confine him in a padded room and to keep him restrained by mechanical means for a considerable period. He came to us in a straight jacket with severe bruises over his entire body and the tips of his fingers deeply excoriated from his efforts to free himself. His facial expression was one of extreme terror, and when the orderlies approached to transfer him from the stretcher to the bed, he gave a frightened shriek. His escort warned the nurse that if the jacket were removed the patient would surely kill somebody; nevertheless, the matron without hesitation entered his room alone, placed a cigarette between his lips, lighted it for him and at once proceeded with her scissors to cut the offensive confining apparatus from his body. The sight of the nurse's uniform seemed to bring both surprise and reassurance, for he asked, "Do you have nurses to take care of us here?" The words were at once an indictment of the shackling and terrorizing methods of his former treatment, and a touching testimony of the confidence reposed in the nursing sisters by the wounded soldier—even the soldier "wounded in mind." This patient did not speak an irrational word during his treatment here; within a few days he was given parole privileges, and in less than three months was discharged to his home fully recovered.

Of all individuals connected with the hospital, none can do more to disturb its peace than the nurses and orderlies; therefore, it is of the utmost importance that only capable conscientious individuals should be chosen to fill the ranks of the staff. In dealing with the psychoses, good nursing is much more important, as a rule, than medical or surgical procedures, and therefore the general intelligence and natural disposition of the personnel, supplemented by their conception of duty and knowledge of nursing, determine in large measure the curative atmosphere by which the patients are surrounded during their hospital residence. Those who show a lack of suitable temperament and of sound, sensible, dependable qualities, and who persist in disturbing the wards by boisterous behaviour and frivolous conduct, show a glaring want of consideration for their patients and must undergo careful training to eradicate these defects. Noisiness amongst psychotic subjects is as infectious as measles; therefore, the staff must learn to handle keys, dishes, doors, and furniture gently and quietly. They are requested to wear rubber heels and cultivate a noiseless tread; they must understand the necessity of promptly answering the telephone and waiter. Shouting commands to patients or fellow workers is regarded as

inexcusable. Nurses must acquire the habit of speakly lowly and distinctly. If a nursing sister is negligent in these matters, she need not wonder if her orderlies regard them lightly.

The corridors in the hospital have been covered with battleship linoleum and rubber treads, to abolish the noisiness caused by the irritating tramp of many feet on hardwood floors; the blowing of whistles and ringing of bells has been restricted to emergency alarms. It has been found that even a disorderly appearance of the wards is suggestive; hence the importance of keeping the hospital at all times scrupulously neat and clean from roof to cellar; and of repairing immediately accidental damage to walls, paint, and equipment; no detail is too small to deserve attention in our campaign to reduce to a minimum the number of irritating stimuli from every source.

It must not be forgotten that in the less acute cases occupation promotes quietude. We have all noticed how much more excitable patients become when for any reason the usual amount of occupation cannot be arranged. Fortunately for the patients here, provision has been made for carefully graded bodily and mental exercise for every suitable case; basketry, bead work, typewriting, carpentry, shoemaking, painting, athletic sports, musical drill, educational classes, dancing, and musical instructions have all been so organized that a definite programme may be mapped out for each patient to fill the entire day from the time of rising till bedtime. Even in the case of those whose bodies must remain inactive, employment and diversion are provided at the bedside by the ward aides detailed to the acute dormitories. Much is lacking in the endeavours of any nurse if listless and unemployed patients are a customary sight in her ward.

Owing to the excellence of the therapeutic facilities in this hospital, one misses many unseemly spectacles which are all too common in institutions for the insane less generously staffed and equipped. There is an absence of "herding", and the drooling, statuesque, unkempt appearance of advanced dementia. Visiting psychiatrists have frequently commented on the fact that the special attention and supervision provided has given our cases the appearance of an exceptionally mild type. The morbid process is the same, however, and there is no doubt that under less favourable conditions, mental disintegration would be as rapid and complete in the case of our patients as in those seen on the chronic wards of any asylum where patients are given only custodial care.

Though cognizant of our inability to attain perfection and to

secure the entire abolition of maniacal excitement in our hospital, yet, as the staff become more proficient in the application of the newer methods we are approaching closer and closer to that ideal. Experience has convinced me that by unceasing vigilance in checking troublesome and disorderly tendencies before they have formed into habits, and by perseverance in an attitude of kindness towards the patient—not a mere sentimental kindness—but a constructive kindness based on an understanding of the deeper springs of the aberrant behaviour of the mentally deranged, the atmosphere of any institution for the mentally afflicted can, and should, be made as quiet and peaceful as that of any well-conducted general hospital.

The Dominion Council of Health has devoted a great deal of attention to the control of venereal diseases. A complete unanimity of opinion has been expressed by the representatives of all the provinces as to the proper measures to be adopted, and assurances have been given by them of most active co-operation with the federal department. The council has decided that out of the appropriation set apart by the Federal Government for division among the provinces for the combatting of the disease, the sum of $10,000 shall be given direct to the national council for the combatting of venereal diseases in their nation-wide campaign of information and propaganda and measures of treatment; and a further sum of $10,000 shall be expended by the federal department of health along the same lines. The balance of the grant, $180,000, will be proportionately assigned to the provinces, and their representatives, who assure the department of health that equivalent amounts of provincial funds will be set apart for the purpose.

Case Report

BACILLUS COLI INFECTION OF THE KIDNEY

By Philip Weatherbe, M.B., Ch.B., F.A.C.S.

Halifax, N.S.

TWO cases of special interest appeared in my practice recently. I had attended both patients for some years, so knew their previous history and constitution, which in both cases revealed a state of comparative good health. Therefore, I was surprised to know that they had both suddenly developed a marked hæmaturia; in the one case with practically no symptoms except the passing of practically pure blood by the urethra, and in the other the same condition with the addition of pain localized to the left side with some rise of temperature and malaise as well. The cause of the bleeding puzzled me, because I knew the history of both cases fairly accurately..

However, the passing of urine, in my presence, into three glasses (the three-glass test) and the examination of a few drops of the urine under the microscope, immediately helped to put me on the right track. A further examination of the urine by the pathologist with the request for a culture and an examination for tubercle bacilli, showed the presence of bacillus coli only and no tubercle bacilli.

A careful summing up of the history with an abdominal, rectal, and *x*-ray examination of the kidney region proved both cases to be ones of bacillus coli infection of the kidneys. In one case mild and bilateral, in the other severe and unilateral.

Case 1. The mild variety of bacillus coli infection of the kidneys (renal pelvitis).

Boy, aged eight, November 24th, 1918, sudden hæmaturia following within twenty-four hours of operation upon nose (removing spur of bone from nasal septum). Past history: For years has been

Read at the annual meeting of the Medical Society of Nova Scotia, Antigonish, July 2nd, 1919.

constipated and ill nourished with an unhealthy complexion and nervous temperament. No previous history of any kidney or bladder trouble. Has been having strenuous massage by an osteopath for constipation, but not under medical direction. Present history: Suddenly, forty-eight hours after operation on nose, he experienced pain on micturition and the passing of bright red blood with clots and particles of yellow material, the urine being bright red with thick yellow deposit. No increase of pulse rate or rise of temperature. Urine examination: Blood and pus and bright red clots. Neutral or slightly acid reaction. Shot silk appearance of some specimens with strong fishy smell. Albumen positive, specific gravity, 1010. Microscope showed nothing but blood and pus cells. Culture showed bacillus coli, but no tubercle bacilli. Rectal examined and sound, negative. *X*-ray examination revealed nothing. Heart, lungs and other organs healthy. No pain, tenderness or swelling in kidney regions.

Diagnosis: Nephritis or renal pelvitis (pyelo-nephritis), due to infection by the colon bacilli reaching the kidney either directly through lymphatics or through the blood stream; the constipation favouring the development of colon bacilli and the injury to the kidneys by the severe massage lowering the vitality of that organ so that it became easily affected. The operation with general anæsthetic and resulting starvation still further lowering the general vitality.

Treatment: Rest, with the administration of potassium and sodium citrate until an alkaline urine was obtained, as the colon bacillus can only grow in an acid medium.

Result: Cure within one month.

December 24th, 1918. Urine examination: Colour, straw, clear; odour, ammoniacal; reaction, strongly alkaline; specific gravity, 1014; albumen, none; sugar, none; deposit, a slight flocculent whitish deposit; miscroscopically, no pus, but crystals of calcium phosphate were present.

Has had no recurrence and has been perfectly well ever since.

Case 2. The severe type of bacillus coli infection of kidney, unilateral bacillus coli nephritis.

Boy, aged eighteen, July 26th, 1918. After working all day lifting stone, he felt exhausted with a pain in left lumbar region. He remained in an exhausted condition for a week, ill enough to consult a physician. After one week he felt well again, until August 20th, 1918, when he suddenly passed bloody urine with red clots

accompanied by pain. Pain over bladder and over left kidney. This condition remained present until operation. Intermittent hæmaturia with blood clots and pus; one specimen being clear and possibly the next cloudy, with blood clots. Fever of 100° to 104° with malaise persisted throughout until operation. Microscopic examination of the urine showed blood and pus with motile organisms proving on culture to be bacillus coli. *X*-ray examination revealed nothing.

Treatment. Urotropin and sodium acid phosphate proved to be of no avail. Nor did potassium citrate in large doses along with sodium citrate in milk. His condition remained very much the same. His temperature remained high, about 104° and the urine much the same. Pain and swelling with rigidity in left kidney region. I decided, September 8th, 1918, to explore left kidney, and found large dark œdematous kidney difficult to deliver. After delivery, there proved to be multiple abscesses or purulent infarcts evidently of a septic embolic nature. I excised the kidney with satisfactory after results.

Diagnosis. Severe unilateral bacillus coli nephritis or multiple abscesses of left kidney of embolic origin.

Explanation of Case 2: The primary source of infection is from the bowel. In considering the history of the case the evidence of strain produced by the heavy lifting jarred the kidney or loosened it from its attachments causing an injury. The general physical exhaustion from overwork and long hours, lowered the vitality so that bacillus coli could enter the general circulation, producing bacterial emboli and thus septic infarcts in the injured left kidney. The month intervening between the initial lesion and the evidence of metastasis to the left kidney favoured this explanation of infection by the blood stream. Another possibility is a direct infection of the left kidney from the descending colon through the lymphatic system. June 30th, 1919. Urine normal. Patient looks and feels perfectly well, and has been so ever since recovery from the operation.

Editorial

THE RESIGNATION OF SIR ANDREW MACPHAIL

IT has been with much regret that the Editorial Board has accepted the resignation of Sir Andrew Macphail as chief editor of our Journal; a resignation necessitated by an impairment of his eyesight, the result of an accident which occurred some years ago. While accepting his resignation with reluctancy, they desire to express their appreciation of the value of the services rendered to the Journal by Sir Andrew Macphail during the fifteen years in which he has been connected with it; at first as a collaborator on the Editorial Board, when it was still the *Montreal Medical Journal*, and in the last half of this period as Chief Editor with the late Dr. John McCrae as his assistant. The profession in Canada owes much to Sir Andrew Macphail for this service rendered freely and in a most disinterested manner.

To Sir Andrew Macphail, literary work, however, has always made a peculiar appeal. Even in his undergraduate days his lucid and concise writing attracted the attention of his professors, and after his graduation, literature shared with his professional duties much of his time and thought.

He was appointed Professor of the History of Medicine in McGill University in 1905, and in the same year delighted his friends by the appearance from the press of his first book of essays: "Essays in Puritanism," which by its detail of facts and its keen description of the spirit of the men who founded Massachusetts and contributed so much to its growth during the eighteenth and nineteenth centuries, evinced much historical study. "Essays in Politics" and "Essays in Fallacy" followed in succession, and have been

widely read. All his writings have attracted attention by the originality and vigour of their style, which was often trenchant, always polished, and in places displayed a peculiar genius for paradox and antithesis which made them charming and stimulating reading.

His "Book of Sorrow", an anthology of English verse containing much of the best that has been written upon the theme of sorrow, was published during the second year of the war, and must be regarded not only as an indication of his extensive knowledge of poetry, but of his possession in a high degree of the critical faculty of selection. A further proof of this was evidenced by his bringing into notice the verses by Marjorie Pickthall who will always be given a high position among our Canadian poets.

Early in the war he volunteered for overseas service, and did much good work in a Canadian Field Ambulance Corps. In 1917, Sir Andrew Macphail was asked to deliver the Cavendish Lecture in London. "A Day's Work," which was the title of his address, was a brilliant description of service in connection with ambulance work at Vimy Ridge. In the early months of the present year he has given us a very sympathetic account of the life of his friend, Lieutenant-Colonel John MacCrae.

Sir Andrew Macphail is as yet a comparatively young man, and it is the sincere wish of all his friends that with increased leisure he may still be able to bring forth out of his treasure house, many things new and old.

THE DEPARTURE OF PROFESSOR ADAMI

THE acceptance by Professor Adami of the Chancellorship of the University of Liverpool and his resignation from the chair of pathology in McGill University, which he so ably filled for many years, must not only be regarded as an important event in the history of McGill University, but as a

great loss to Canadian medicine, and to our Medical Association, at whose annual meetings he always presented some valuable contribution, and also to our Journal of which he was an important collaborator. He came to Montreal in 1892, bringing with him a fresh and deep enthusiasm for all that was new and wonderful in the medicine of those days. Pathology in the old world had just come into its own, and Professor Adami brought with him to Canada its newly acquired truths and its new methods of research. He came as a young and already distinguished scholar from Owen's College, Manchester, from Christ's College, Cambridge, from Breslau and from Paris. For twelve years after graduation he had followed the arduous way of science and had enriched his mind with all the learning of the schools. A good student, he was a most interesting instructor, and his students, now scattered far and wide, on frequent occasions showed their appreciation of his teaching. In Montreal he was for many years the head of pathology in the University, in the hospitals and in its medical societies.

Professor Adami had the use of letters, and wrote with a peculiar charm. The subject of inflammation about that time was attracting much attention, and his essay upon it in Albutt's "New System of Medicine" was characterized by great clearness of thought and expression, and for many years was regarded as authoritative. He wrote incessantly from his full store, and in 1908 brought out his great work on the "Principles of Pathology". For the second edition he had as fellow labourer the late and much lamented Dr. John McCrae.

In 1915, Professor Adami went overseas as Lieutenant-Colonel in the Canadian Army Medical Corps. Shortly after his arrival in England he was placed in charge of the Canadian Army Medical Records. Under his editorship the first volume of the story of the Canadian Army Medical Corps was published one year ago. The second volume, we understand, is now in print. In those years of war he renewed old ties,

and it did not come altogether as a surprise to his friends on this side of the seas that he should choose to complete his career in the land of his birth. He will be much missed, not only by the profession generally in Montreal, but also by every member of our Association, both in its councils and at its meetings.

In the new and important post to which he has been elected Professor Adami may be assured of the kind remembrance, good wishes and hearty admiration of every reader of our Journal.

THE NEW DENTISTRY

A TOMBSTONE in the churchyard in Cheltenham, England, bears this inscription: "Here lie I and my three daughters, who died from drinking Cheltenham water. If we had stuck to Epsom salts, we wouldn't be in these here vaults."

In days gone by, to be old was likely to be toothless, which was an unfortunate business. At a later day, many of the old were rescued from toothlessness by glittering crowns and massive bridges, but pity 'twas, many of the rescued failed to grow old, and their new teeth bore the same relation to their early demise as did the Cheltenham waters to the subjects of the epitaph above.

Dental infection and disease were not connected for the first time by this generation, for in Benjamin Rush's "Medical Inquiries and Observations", the following passage occurs: "Some time in the month of October, 1801, I attended Miss A. C. with a rheumatism in her hip joint which yielded for a while to the several remedies for that disease. In the month of November it returned, accompanied by a severe toothache. Suspecting that the rheumatism was excited by the pain in her tooth which was decayed, I directed it to be extracted. The rheumatism immediately left her hip and she recovered in a few days. I cannot help thinking that our success in

the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth in sick people and by advising their extraction in every case in which they are decayed. It is not necessary that they should be attended with pain in order to produce diseases, for splinters, tumours, and other irritants beforementioned often bring on disease and death when they give no pain and are unsuspected as causes of them."

Those who heard the address of William Hunter in Montreal some years ago will associate his name with the reopening of the subject of dental infections as a cause of general disease. He drew attention then to the large number of British and American people who had had so-called "American dentistry" done, and who suffered from pernicious anæmia and other systemic diseases. From such observations, and particularly from the development of radiographic studies, the dental profession of late years has adopted to a greater extent the medical rather than the mechanical point of view toward artificial teeth.

Fixed bridge work in the mouth was found to be clinically harmful because to fit properly a full dental band about the tooth, the larger biting end had to be ground to the same size as the smaller neck of the tooth, thus robbing the tooth of its enamel. If this grinding was not done, accurate fitting was impossible, and a dead space open to infection was established at the gum margin with ultimate cutting off of the nutrition of the tooth and the train of evils resulting in abscess formation. Another difficulty lies in the "anchoring" of the pillars of the bridge by which the stimulus of movement is removed from the pericementum, which in consequence loses its vitality.

There must follow a strong reaction against the placing of such mechanical appliances in the mouths of people, and the present trend of dental teaching would discourage fixed bridge work except where the mechanical conditions are ideal and the dangers of infection can be eliminated; a rare combination.

In its stead, removable appliances and more effective measures for sterilizing and closing root canals, are employed and the modern dentist instead of being a purveyor of body infection, will be one of its most potent enemies.

HIGH PROTEIN DIET AS A FACTOR IN THE PRODUCTION OF NEPHRITIS

THE ætiology of a large number of the cases of nephritis met with in practice is acknowledged by all to be obscure. An attempt has been made recently by Newburgh, of Ann Arbor, to obtain further insight into the causation of such cases. In the last number of the *Archives of Internal Medicine* he has presented us with the results of investigations carried out on rabbits to determine the effect on the renal cells of a dietary with an abnormally high protein content.

It is generally acknowledged that the amount of injury produced by nephro-toxic substances on the kidney is largely dependent on the degree of their concentration in the blood stream. Mercury in therapeutic doses has usually no detectable toxic effect on the kidney, but when its use is long continued, albumen and casts may appear in the urine, and when taken in larger amounts in a soluble form, an acute nephritis will result. The amount of injury to the renal cells thus appears to be determined not only by the inherent toxic properties of the foreign substance, but also by the amount of it which passes through the kidney cells in a unit of time. Newburgh in his investigations tried to determine whether the same rule applied to the nitrogenous bodies habitually excreted in the urine. "May it not be true," he asks, "that the kidney can excrete a certain amount of nitrogenous matter for an indefinite time without suffering harm, but will be injured if the quantity of some, or all of the nitrogenous waste products be greatly increased, or kept at a high level over a long period?"

The experiments consisted in feeding rabbits on a diet abnormally high in protein. The protein content was raised in one group by means of egg whites; in a second group by means of casein; and in a third group by feeding soy beans. He claims the following results were obtained: Signs of renal injury quickly and constantly appeared in rabbits that ate several egg whites mixed in a dietary containing meal, cabbage and carrots. If this dietary was prolonged over several months, a well marked acute or sub-acute nephritis resulted.

When casein was employed to increase the protein element in the dietary, the rabbits showed no demonstrable renal injury, so long as no more than 15 gms. of casein daily were eaten by them, but when the daily intake was 30 gms., *i.e.*, about three times the amount of protein in a rabbit's normal dietary, well marked symptoms of injury to the kidney appeared in the urine.

All the rabbits to whom soy beans were fed acquired in time a chronic nephritis, closely resembling the secondarily contracted kidney of pathologists. Judging by the constancy and severity of the damage to the epithelium of the convoluted tubules, the impression was gained that the offending substance had its primary and chief deleterious effect upon the epithelium of the tubules, and the injury to these was associated with an overgrowth of the connective tissue.

That the renal injuries produced by these diets was not due to the passage through the kidney of urea in large amounts was apparently negatived by the results obtained from adding pure urea to the extent of 5 gms. daily to the diet of rabbits who were kept on an otherwise normal diet. Even when this excess of urea was continued for months, no indications of any injurious action on the kidney was observed. Moreover, a comparison of the urea output in rabbits eating casein, with that of those eating soy beans, showed that nephritis appeared in the soy bean group with a much smaller output of urea, than in the casein group. A chronic nephritis

was produced when soy beans were eaten in sufficient quantity to double the total nitrogen metabolism, but casein and egg white required to be fed in sufficient amount to treble the total nitrogen in order to injure the kidney seriously; and furthermore, the injury from both casein and egg white tended to assume an acute rather than a chronic character. The results of the investigation suggested that the kidney injury was related rather to those digestive products of protein which vary both quantitatively and qualitatively with the type of protein eaten. Newburgh thinks the amino acids may be important factors. They form a constant constituent of the urinary excretion, and their amount varies with the character of the protein ingested. At present, however, no data are available to enable us to speak with certainty on the matter.

In view of the unusually large registration of students in the first year in medicine in the various universities it has been thought of interest to obtain the exact figures in so far as these have been accessible to us. An enquiry to this effect has elicited the following facts:

At the University of Toronto, four hundred and twenty students are registered in the first year, of whom two hundred and fifty-four are in the five-years' course, and one hundred and sixty-six in the six-years' course. The number of men who have been on overseas service in the various years is as follows: Second year, forty-seven; third year, sixty-five; fourth year, sixty-two; fifth year, fifty-two. A special schedule has been arranged for the students registered in the five-years' course. In the six-years' course, the students are required to take one optional course during their first year, either English, scientific French, scientific German, or mathematics.

At McGill University, the number of students registered in the first year is two hundred and thirty-three, of whom one hundred and forty-nine are in the five, and eighty-four in the six-years' course; of these, six are women.

Manitoba Medical College has one hundred and eight students registered in the first year.

In the University of Montreal, there are ninety-five, of whom sixty-five are holders of a diploma of Bachelor of Arts, Letters, or Science.

At Queen's University, Kingston, there are eighty-one. The increase over previous years is as follows: 1915–1917, seventy-four; 1916–1917, fifty; 1917–1918, thirty-nine; 1918–1919, fifty-nine; 1910–1920, eighty-one.

The University of Alberta has seventy-three students in the first year, of whom sixty-eight are men and five women, as against forty-three last year. The total registration in medicine is one hundred and twenty-nine as against eighty-six last year, and, of these, returned men form a large proportion.

Dalhousie University has seventy students registered in the first year.

The Western University has fifty-four, of whom thirty-six are registered in the five, and eighteen in the six-years' course. In the session 1918–1919, thirty-six students were registered in the first year, and in 1917–1918, eighteen.

The cause of this general increase in registration is ascribed to the return from overseas of men who enlisted at the usual age for entrance into medicine during the five years of the war, and also to the desire for knowledge such as universities alone can give, which has been stimulated by the need of the present time for reconstruction along all lines.

The Association has appointed the J. B. Lippincott Company, Canadian Branch, 201 Unity Building, Montreal, official agents for the purpose of soliciting new subscribers to the Journal. The Company's salesmen will during the next year make an active canvass of the profession of the Dominion of Canada and Newfoundland.

Retrospect

GOETSCH, EMIL: "NEWER METHODS IN THE DIAGNOSIS OF THYROID DISORDERS." *N.Y. State Jour. of Med.*, July, 1918.

IN this article, Goetsch discusses the production of symptoms of hyperthyroidism by adenomata of the gland, and the adrenal test in the detection of hyperthyroidism.

Of the two types of thyroid enlargement, the colloid and that of Graves' disease, there is a general agreement of the relation of the pathological characters and the clinical manifestations. In the ordinary colloid enlargement there is enlargement of the thyroid alveoli with thinning and atrophy of the epithelium. Clinical manifestations of a general character are commonly absent, but a mild grade of hyper- or even hypo-thyroidism may exist. When these growths attain a large size, definite hypothyroidism may be present from diminished activity of the epithelial elements.

In Graves' disease, on the other hand, there is a diffuse hypertrophy and hyperplasia of the epithelial elements, with infolding of the lining membrane of the alveoli, a marked decrease of colloid and an increase in vascularity.

The relationship of adenomata to clinical symptoms has, however, been obscure and confused. The histological characters are not constant, every conceivable type being found, depending on the growth and proliferation of the cells, and on the various forms of degeneration to which these growths are liable. Where large adenomata are present with extensive atrophy of the epithelium, hyperthyroidism may be present. Again, symptoms may be lacking or definite symptoms of hypothyroidism may be found. This variation in symptoms has led to confusion amongst pathologists as to their significance, and views are confused in their relationship to the opposed types of clinical manifestation. It seems probable that the adenomata are largely responsible for the failure of pathologists to predict the character of clinical symptoms in about 20 per cent. of cases. It seems, therefore, highly desirable to obtain a histological method capable of demonstrating within the cell the structures responsible for their functional activity. Certain elements, termed mitochondria, exist in epithelium, ap-

pearing as granules or straight or curved filaments or rods of varying lengths up to four or five microns. They are most abundant in the active stages of the life of the cell and diminish progressively in number as the cell becomes senile. In increased activity of the cell it seems probable that the mitochondria are increased.

In two hundred cases of thyroid disease, examination showed that in colloid goitre, unassociated with symptoms of hyperthyroidism, very few or practically none of these structures were found in the thyroid cells. In every case of exophthalmic goitre examined, the mitochondria were present in enormous numbers. In the cases associated with mild hyperthyroidism the mitochondria are found in moderate numbers, whilst in the cases of adenomata, with symptoms of hyperthyroidism, they are found in excessive numbers, and this holds true whether the adenomata presents the colloid picture of that of hypertrophy and hyperplasia. The question of symptoms produced by adenomata is purely one of the amount of secretion elaborated. With lessening activity the mitochondria diminish in number and may almost completely disappear. A further proof that adenomata are responsible for hyperthyroidism is furnished by the clinical observation that their removal by surgical procedures almost immediately improves the condition of the patients. The presence of small adenomata, not large enough to cause any obvious enlargement of the gland, is responsible for many cases with symptoms of hyperthyroidism and their degeneration for spontaneous cure. Recurrence of the adenomata may occur with recurrence of symptoms. Many cases of "nervous breakdown" may be due to small growths presenting no obvious enlargement of the gland.

Adrenal Hypersensitiveness in Clinical States of Hyperthyroidism

Experimental work by various observers has shown an increased thyroid secretion from stimulation with adrenalin, due to the increased irritability of the sympathetic system. With the adrenalin stimulus, the blood pressure rises, but the pulse rate is not increased, the latter results being contrary to those observed by Goetsch in clinical cases.

Doses of .5 c.c. (7½ m.) of 1-1000 fresh adrenalin solution, although producing a very slight rise of blood pressure in healthy people, produces very marked changes in hyperthyroidism. The blood pressure soon rises at least ten points, and may rise to as much as fifty. In thirty to thirty-five minutes, there is a moderate

fall followed by a slight secondary rise. Along with this there may be found tremor, asthenia, throbbing, and in fact an increase of any symptoms complained of by the patient. Vaso motor constriction with pallor is often followed by flushing and sweating. The pulse rate is considerably increased, and the diastolic pressure curve often lessens during the systolic rise.

In order to interpret a test as positive, a majority of these signs or symptoms should be manifest. At times there is a considerable rise in pulse rate without much change in blood pressure, but with a considerable increase of symptoms. Again marked increase in symptoms may be present without much change in the blood pressure or pulse rate and may be regarded as positive; although a slight transient rise in blood pressure and pulse occasionally occur in other conditions, but with complete absence of the subjective and objective symptoms upon which much stress is laid in the diagnosis. In hyperthyroidism again the reaction lasts from three-quarters to an hour and a half, distinguishing it from the transient reaction in other conditions. The test has proved of the greatest value in differentiating hyperthyroidism from conditions stimulating it. Even in adenomata, too small to feel or see, positive reactions occur, and the removal of the growth results in complete relief of the symptoms.

Should the writer's views be substantiated, a considerable number of ill-defined nervous conditions should be relieved by surgical treatment. A suspicion of early tuberculosis again is often awakened in the subjects of hyperthyroidism, confusion between the two conditions being due to the presence in both of such symptoms as slight elevations of temperature, rapid pulse, weakness, and sweats.

F. G. Finley

HYPERTROPHIC PYLORIC STENOSIS IN INFANTS

Reuben, Mark S.: "Pyloric Stenosis in Infancy." *Archives of Pediatrics*, 1914.

Downes, W. A.: "Pyloric Obstruction." *Surgery, Gynæcology and Obstetrics*, 1916, vol. xxii, p. 251.

Holt, L. Emmett: "Hypertrophic Stenosis in Infants." *Journal American Medical Association*, May, 1917, vol. lxviii.

Sauer, L. W.: "The Use of Thick Farina in the Treatment of Pyloric Stenosis." *Archives of Pediatrics*, July, 1919.

Porter, Langley: "A Retrospect of Fifteen Years' Experience in the Treatment of Hypertrophic Pyloric Obstruction in Infants." *Archives of Pediatrics*, July, 1919.

THE condition known as hypertrophic stenosis in infants, using the term adopted by Holt, has attracted, in recent years, widespread and increasing interest among pediatricians and surgeons. This interesting condition was first recognized by Williamson in 1841, who, in a paper entitled, "A case of Scirrhus of the Stomach, probably Congenital," reported the case of a male child who died at the age of five weeks, in whom at autopsy the pylorus was found hard and indurated, and so contracted as scarcely to admit a small probe.

At the present time most writers are in agreement in the description of a typical case; though the wide difference in the recorded percentage of mortality makes it impossible to avoid the conclusion that many cases of vomiting in infants are classed as hypertrophic stenosis by some writers which would be excluded by others. The clinical picture as described by Holt is fairly in accord with that of other pediatricians, and carries with it the weight of his large experience, one hundred and forty-one cases reported in 1917. An infant, usually breast fed, who has nursed well, gained normally in weight, has had sufficient and well digested stools, begins to vomit persistently and forcibly. The onset of the vomiting is usually in the third or fourth week and occurs soon after or even during nursing. The whole content of the stomach is shot out with violence. The vomiting is not accompanied by pain, and, until secondary fermentation sets in, the food is returned unaltered. As a consequence of the vomiting, constipation is an early symptom. The stools are dark brown, and in severe cases may contain no milk residue. Visible peristalsis is generally accepted as a constant symptom. The waves pass from left to right and are best seen

after feeding. It is usually easy to differentiate between stomach and intestinal peristalsis.

A palpable tumour is usually present, and is regarded by many as essential to diagnosis. Reuben states, however, that a tumour was felt in only 25 per cent. of his cases; Holt, that though a tumour is not essential to the diagnosis, it can nearly always be felt by a careful observer, and in fully three fourths of the cases it is unmistakable. In eighteen out of nineteen cases reported by Richter, the tumour was palpable before operation; in three, which he classes as spasmodic, no tumour was found. Downes states that in the sixty-six cases operated on by him, with only one exception he was able to detect the characteristic tumour at the pylorus.

Richter describes this tumour as found at operation and at autopsy to be a firm olive shaped body roughly from one half to three quarters of an inch in length. It is covered by smooth glistening peritoneum. There is no external evidence of inflammatory reaction and there is no fixation. It is sharply marked off from the stomach and duodenum. Histologically it is a simple hyperplasia of the circular muscle fibres.

From the fact that the tumour is palpable so soon after birth, and that it has been observed in the new born (Ashby, Simonson, Delamere), and once at least in a seven months' fœtus, the hypertrophy is regarded by most writers as prenatal. Wachenheim found in four consecutive autopsies on new born infants dying from other causes, "a thickening of the pylorus, as described in cases of true pyloric hypertrophy." He suggests that a relative thickening, a potential hypertrophic stenosis, is a normal condition in the new born infant.

Writers differ widely in their estimation of the part played by spasm both as regards the determination of the onset of the obstruction and as a possible factor in producing the hypertrophy.

Downes and Scudder believe that an œdema, observed at operation, is the immediate cause of the obstruction in an already hypertrophied pylorus. Still and Kelly hold that spasm plays the dominant rôle; while Rachford believes that spasm is the cause of an hypertrophy which is not prenatal. As to the ætiology of the hypertrophy and the subsequent stenosis, no theory supported by experimental or other convincing evidence has been put forward. Quite recently, however, in the *Lancet* (September, 1919), George R. Pirie has made a suggestion that the hypertrophy is caused by a lack of balance in the prenatal adrenalin secretion; the hyperadrenalism producing an hypertrophy of unstriped muscular fibre

throughout the body. Proof is not claimed. One autopsy is detailed in which an enlarged adrenal was found associated with hypertrophy of the sphincter muscles of the œsophagus, pylorus, ileoccæal region of the intestine, rectum, and ureters. The most reasonable view would appear to be that both hypertrophy and spasm are usually present, that the hypertrophy is prenatal, and that superimposed on this, spasm determines the onset of the obstructive symptoms.

The important thing to determine is not the degree of the hypertrophy nor the completeness of the spasm; but the degree of obstruction to the passage of food.

The method of treatment adopted or recommended may follow either medical or surgical lines. The statistical evidence presented is so confusing in its widely varying mortality, that a judgement on the relative values of the two lines of treatment, based on the reported percentage of deaths, is impossible. Hutchinson reported seventeen cases treated at home with seventeen recoveries; sixty-four cases treated medically in hospital with a mortality of 78 per cent. Richter, in 1914, reported twenty-two cases treated by gastro-enterostomy with nineteen recoveries; Scudder, seventeen with thirteen recoveries; Downes, twenty-two with fifteen recoveries; Porter this year reports twenty-six cases treated by Rammstedt operation with only two deaths; Strauss, one hundred and forty-two with three deaths; Sedgwick, sixty-eight cases, of which sixty-four were treated without operation, and without one death. More valuable are the statistics of a single clinic in which the cases were treated by the same physicians at different periods and by different methods. Fortunately, such a comparison is found in Holt's paper.

		No.	Recovered	Died	Percentage of deaths
First period, 1901–1911:					
Cases without operation		24	10	14	58
Gastro-enterostomy		17	7	10	58
Second period, 1912–1914:					
Cases without operation		7	3	4	57
Cases with operation:					
Gastro-enterostomy	24				
Rammstedt operation	6				
		30	17	13	43
Third period, 1915–1916:					
Cases without operation		2	1	1	50
Rammstedt operation		61	47	14	23

It is significant not only that the mortality of the cases operated on decreased from 58 per cent. to 23 per cent., but that the number of cases presented for operation in the latest period was sixty-one out of sixty-three. Holt believes that many of the milder cases may recover with medical treatment alone; but that every case which does not improve under such treatment in the course of two to three weeks should be treated surgically. In the more severe forms, only a very short delay is permissible.

The medical treatment consists in careful feeding and stomach lavage. Breast feeding, if possible, should be maintained. In July of last year Sauer reported the successful use in this condition of a thick food such as had previously been recommended in cases of idiopathic vomiting. He reports twelve cases fed in this way, in all of which the vomiting soon stopped. In most of the cases, the palpable tumour and visible peristalsis persisted for months after the vomiting had ceased. Porter, in July, 1919, reported ten cases treated in this way with recovery. In the discussion which followed the reading of this paper, Helmholz stated that they were continuing to use this method of treatment which consisted in feeding breast milk or cow's milk mixtures thickened with farina or rice flour.

Up to 1914, the surgical treatment usually adopted was a posterior gastro-enterostomy. The mortality varied from 25 per cent. to 32 per cent.

Since that date the Rammstedt operation is preferred by most operators. An incision is made through the peritoneum and the hypertrophied pyloric sphincter down to the submucosa. Its success depends on the ability of the mucosa to protect the peritoneum from stomach or duodenal leakage. While simple and rapid, the operation is not wholly without difficulty. The obstructing sphincter must be thoroughly divided, but the mucosa must not be injured. On the stomach side, this is easily avoided, but on the duodenal side much care is necessary. The advantages of the procedure are obvious, and the number of cases in which this operation has been performed is sufficient to prove that when successfully accomplished, the results are satisfactory.

F. A. C. Scrimger

MODERN VIEWS ON ASTHMA IN CHILDREN

Blackley: "Experimental Researches on the Cause and Nature of Hay Fever." London, 1873.

Schloss: "A Case of Allergy to Common Foods." *Am. Jour. Diseases of Children*, 1912, vol. iii, No. 6, p. 341.

Talbot, Fritz B.: "The Treatment of Asthma in Children." Read before the Medical Society of the County of Kings, March 20th, 1917.

Walker, J. C.: "A Clinical Study of Four Hundred Patients with Bronchial Asthma." *Boston Med. and Surg. Jour.*, August, 1918.

Walker, J. C.: "Sensitization and Treatment of Bronchial Asthmatics with Pollens." *Am. Jour. of the Med. Sciences*, March, 1919.

During the last few years a great deal of work has been done in connection with anaphylaxis in asthma and eczema. These two disorders are often very closely associated, and in a succeeding number of this Journal we hope to discuss the ætiology and treatment of eczema in children.

Asthma, like other diseases, was treated empirically and symptomatically until recent advances in medicine made it possible, in many cases, to determine its cause. Excluding renal, cardiac and thymic asthma, and asthma due to pressure of bronchial glands, there is still left for consideration a large group of cases which are commonly called "bronchial asthma", and it is with this type of case that some progress in our knowledge of its ætiology has been made along anaphylactic lines during the last few years.

The essential feature of this form of asthma is the parenteral introduction into the body of a foreign protein substance leading to the development of a specific proteolytic enzyme which appears to be stored in the body cells, causing them to be sensitized. A second introduction of this protein causes a reactivation to take place with the rapid splitting up of the protein, and the formation and liberation of poisonous constituents. Manwaloff injected animals with the serum of an asthmatic, thus supplying the constitutional factor, and then injected a solution made from the Charcot-Leyden crystals of the asthmatic sputum. Severe anaphylaxis developed in the animals then treated, while there was none in the controls.

The investigator concludes that the crystals, due to the products of protein decomposition, are the cause of the attacks.

Chandler Walker says "we now know that, when a specific antigen (a protein in the case of asthma and anaphylaxis) meets its antibody, the reaction between them gives rise to a toxic product and this causes the characteristic symptoms known as anaphylactic shock."

In 1873 Blackley found that pollens caused a reaction on the scarified skin of individuals suffering from hay fever. In 1912 Schloss described a skin reaction, obtained with egg protein in patients susceptible to eggs, and from that time on a host of workers have been applying themselves to the problem.

The method of testing anaphylaxis is performed in the following manner:—a linear scarification is made through a drop or two of decinormal soda solution which is placed on the flexor surface of the arm. Care should be taken not to draw blood. The scarification is then inoculated by applying the substance to be tested and allowing it to remain there for twenty minutes after which it may be wiped off. If positive, generally in about ten to twenty minutes, an irregular shaped urticarial wheal appears which is surrounded by a pink zone. Occasionally the reaction takes longer to develop and in some cases has been known to take from one hour and a half to two hours. A control should always be done, as it is a well-known fact that a pseudo reaction may appear in certain invididuals, *e.g.*, neurotics and in patients with an "exudative diathesis".

Very often the same individual may react to more than one protein, and still more frequently it requires a very careful and painstaking search to discover the offending protein.

Talbot has classified asthma in the following manner:

I. Inspiratory type due to
   (*a*) Hay fever—pollens
   (*b*) Animal emanations: Horse, dog, and cat's hair; dust and bird feathers.

II. Ingested type due to
   (*a*) Meat
   (*b*) Milk
   (*c*) Eggs
   (*d*) Grains: oats, wheat, etc.
   (*e*) Vegetables: peas, beans, potatoes, etc.
   (*f*) Fruits: orange, banana, etc.

(*g*) Nuts: walnut, pecan, etc.
(*h*) Fish: salmon, etc.
(*i*) Shell-fish: lobsters, crabs, clams, etc.

III. Bacterial type.

After the offending protein or proteins have been discovered, there are two methods of treatment.

I. The simplest and most satisfactory is to remove the source of the trouble.

II. If it is not feasible to remove the cause, the patient may be treated by a method of gradual immunization. This method of treatment is still in the experimental stage.

Preparation of the different food stuffs which may cause asthma are put up in capsule, by the Arlington Chemical Company. Many of these preparations have been and are being tested by Dr. Chandler Walker, of the Peter Bent Brigham Hospital, Boston.

H. P. WRIGHT

Obituary

LIEUTENANT-COLONEL ROBERT WILSON

THE sudden death of Lieutenant-Colonel Robert Wilson, C.A.M.C., of Montreal, who died at the age of fifty-three in St. Andrew's Military Hospital, Toronto, on November 1st, comes as a shock to his many friends and acquaintances throughout Canada. Colonel Wilson was a graduate of McGill University in medicine, and was for many years superintendent of the Western Hospital in Montreal, where he did pioneer work in *x*-rays and electrotherapy. At the outbreak of the war he went overseas with the first Canadian contingent, and was attached to No. 1 Canadian General Hospital in France and later to Granville Canadian Special Hospital at Ramsgate. From there he was called to headquarters in London, raised to the rank of Lieutenant-Colonel, and given charge of the *x*-ray work and equipment of all the Canadian hospitals overseas. After organizing this work he was appointed consultant in electric and hydro-therapeutic treatment for Canada,

and was responsible for this equipment in all the military hospitals here with headquarters at Hart House, Toronto. He was serving in this capacity at the time of his death. Colonel Wilson was a man of untiring enthusiasm, with a genius for mechanics, and his untimely cutting off in the midst of a highly useful career is a matter of much regret to the profession.

DR. WILLIAM WYMOND WALKEM

Dr. William Wymond Walkem, for nearly half a century a resident of Victoria and Vancouver, died on September 29th, at the age of sixty-nine. He was a son of Lieutenant-Colonel Charles Walkem of the Royal Engineers. After graduation at McGill University, he went to British Columbia as private secretary to his brother, Honourable George Walkem, at that time prime minister of the province. He subsequently engaged in the practice of his profession at Victoria, Nanaimo and Vancouver. He was elected, 1894, to the Provincial Legislature for the district of South Nanaimo.

The death occurred at Nashville, Tennessee, of Brigadier-General M. C. McGannon, professor of surgery in the Vanderbilt University. He was born in Edwardsburg, Ontario, and graduated in medicine at McGill University. He was recently appointed Surgeon-General of the State of Tennesee.

Dr. L. B. de la Bruere, of Shawinigan Falls, lost his life in a canoe accident at Lake St. Charles, on September 27th. He was a son of the late Honourable Boucher de la Bruere.

Dr. Ritchie, of Cochrane, who was seriously injured in a motor accident on the Banff road, died in a hospital at Calgary on October 5th. He was a graduate of Edinburgh University and was widely known as an authority on goitre.

Dr. Charles S. Elliott died in Toronto on October 24th, in his eightieth year. He was born in St. Mary's, Nova Scotia, studied medicine first at Halifax, later at Harvard University, where he graduated in 1860. He practised for many years in the northern parts of Ontario. In 1888 he returned to Toronto, where he made a specialty of nervous and mental diseases. He was a medical practitioner of the old school, a man of kindly disposition and sterling integrity.

Dr. J. K. High, a resident of Preston for many years, died at the Galt Hospital recently, at the age of seventy-nine.

Miscellany

News

THE WESTERN PROVINCES

THE annual convention of the Manitoba Medical Association was held the second week in October; about seventy medical men from all over the provinces attended the sessions. Dr. G. Shortreed, of Grandview, delivered the presidential address: "The Medical Profession and the New Democracy." Medical and surgical clinics were held at St. Boniface Hospital, and malnutrition in infants and children was discussed at a clinic held in the Children's Hospital, Winnipeg. The officers elected were: president, Colonel John Gunn, M.D.; first vice-president, Dr. Ferguson, Pilot Mound; second vice-president, Major N. K. McIvor; secretary, Dr. T. G. Hamilton; treasurer, Dr. S. J. S. Pierce, Brandon; executive: Dr. Rogers, Dauphin; Dr. Poole, Neepawa; Dr. Gordon, Portage la Prairie; Dr. Lamont, Treherne; Dr. Miller, Morden.

THE annual convention of the Dominion Pharmaceutical Association was held in Winnipeg for three days in the beginning of October. The address of the president formed the theme of a discussion and "aspirin" was the principal subject. Although there was some difference of opinion, the convention finally agreed to recommend that the patent protecting the name of "aspirin" from general use should be cancelled in Canada, as it had been in the United States.

DR. GEORGE STEPHENS has been appointed by the board of trustees to be superintendent of the Winnipeg General Hospital. Dr. Stephens enlisted in 1915 for medical service in France and went overseas. He was appointed captain and has recently returned to the city. He is a member of the staff of the Soldiers' Civil Re-establishment as a nerve specialist.

THE *Manitoba Gazette* announces the appointment of Dr. C. J. Hossack as pathologist for the Selkirk Hospital for the insane.

Honourable Dr. Armstrong, minister of municipal affairs, announces that the first hospital district as provided for in the act relating to union hospitals, passed at the last session of the legislature, has been organized at Ericsdale, Manitoba.

The fourteenth annual meeting of the Alberta Medical Association was held early in September at Calgary. One hundred and fifteen delegates were in attendance. The important subjects for discussion were the operation of the Compensation Act and the Alberta Liquor Act as they affect the medical profession. Dr. Florin, of Edmonton opened the discussion on the Compensation Act, and at the close of his address suggested a sinking fund, stating that he found employees quite willing to be assessed. He urged the association to appoint a committee to meet the full board and try and arrange a schedule that would be favourable to both the doctors and the labouring men. The Lieutenant-Governor, in a brief speech, thought it would be well for the medical men and the compensation board to get together and devise some plan which would be satisfactory to all concerned.

The resolution passed by the association in reference to the liquor act recommended that the whole matter of liquor prescriptions should be taken out of the doctor's hands and administered by the attorney-general's department, and if this was not considered feasible, a return should be made to the original conditions imposed by the act when first passed by the province.

It was decided to promote the formation of a public health association for Alberta, which should hold its meetings in Edmonton in connection with the meetings of the Alberta Medical Association. The following were elected as officers of the health association: Dr. Gershaw, Medicine Hat, president; Dr. Galbraith, Lethbridge, first vice-president: Dr. R. B. Wells, Edmonton, second vice-president; The old system of committees was done away with and in place of it an executive was formed, made up of all the members of the medical council of the province, associated with the last three vice-presidents.

Two other important resolutions were carried at the closing session. The first urged the establishment of a home for incurables in the province. The second asked the government to provide financial assistance for the establishment of a psychopathic department in at least two of the large general hospitals in Alberta, for the admission and treatment of persons suffering from mental breakdown. At the present time there was absolutely no provision

made for the proper treatment of such patients outside the asylum at Ponoka. The government of the province of Manitoba has recently established a department of this kind at the Winnipeg General Hospital.

The cost of deaths from communicable diseases in Saskatchewan during the year 1917 is estimated at $1,700,230, according to statistics which have been compiled by the Saskatchewan Bureau of Public Health. The total number of deaths from these diseases that year was seven hundred and six, of which four hundred and forty were adults and two hundred and sixty-six, children. The loss involved by death is placed at a life valuation of $500 for a child and $3,000 for an adult, the standard adopted by the life insurance companies. Funeral expenses totalled $57,300, and the total cost for care of the patients amounted to $187,380. The value of the lives lost from communicable diseases, on the basis of insurance standards, was $1,455,500. This total takes no account of loss of time or wages involved, nor does it include overhead charges such as the upkeep of hospitals.

The Saskatchewan Red Cross is now taking steps to establish peace time medical and nursing services, and outlined its policy which it expressed in six valuable suggestions presented at the recent meeting of the Dominion Red Cross in Winnipeg, all of which were approved. The recommendations of the Canadian Nurses' Association to the headquarters of the Red Cross Society, and the suggestions of the Alberta and Manitoba branches of the Red Cross Society, were carefully read and discussed. It was urged that the provincial branch of the Red Cross Society should offer scholarships, open to girls of matriculation standing, of the sum of $75 each, to be given during the first year of their training only.

President E. W. Beatty, of the Canadian Pacific Railway, has given $10,000 to the Vancouver General Hospital in connection with a campaign now under way to raise by popular subscription a fund to pay off the debt on that institution.

Dr. R. H. Storrs has been appointed superintendent of St. Paul's Hospital. Dr. Storrs has lived in Vancouver for the past twelve years as medical inspector for the local offices of the United States immigration service, and was assistant surgeon of the Ameri-

can public health service detailed to Vancouver. Among Vancouver medical men he is regarded as an exceptionally able practitioner.

Dr. H. E. Young, superintendent of the Provincial Board of Health, addressed the Anti-Tuberculosis Society on the occasion of their twelfth annual meeting, recently. He spoke of the work already done by the society and said that to solve the problem promptly, tuberculosis should be dealt with as an economic problem, and he urged that efforts be extended to cover all diseases that were possible forerunners of the dread plague, as well as working conditions and food supplies that may also contribute to the spread of the malady. He predicted the coming of state medical centres, with fewer, bigger and better hospitals, training schools for nurses where each would be taught to be a specialist in one line. These centres would become places for people to go to for advice and treatment, and not the last resource when the patient was physically and financially crippled. The chairman of the board read the twelfth annual report, which also embodies the reports of the medical superintendent of the Tranquille sanitarium. In connection with the report, the speaker stated that the sum of $120,000, necessary to complete improvements, had been promised by the Dominion and provincial governments. Dr. C. H. Vrooman, superintendent of the clinic, concluded the meeting with an illustrated lecture on the work done at the sanitarium.

MEDICAL COLLEGES

The Medical School of the Western University had recently a very instructive course on laboratory diagnosis by Professor Crane.

An educational feature which should have far-reaching effects is noted in the sanitorium training which is adopted by the University of Manitoba as a formal part of the training of fifth year students. This new departure commenced with the session of 1919–20. The Manitoba Sanitorium since 1918 gave instruction in the diagnosis and treatment of tuberculosis to young graduates in medicine and senior medical students. About twenty or twenty-five men have been in residence at the sanitorium, usually for from two weeks to a month at least. The Manitoba institution is credited with having been the first on the continent of its kind to give the

opportunity of such instruction, and to have affiliation for this purpose with a university medical school.

Mr. Irving Cameron, of Toronto University, was one of four nominated as an honorary fellow in the American College of Surgeons at the annual clinical congress in New York.

ARMY MEDICAL SERVICES

Dr. W. C. Arnold, head of the medical branch for the department of soldier civil re-establishment for Saskatchewan, has been appointed deputy director of medical services for Canada with the department. Colonel Davis, C.M.G., formerly A.D.M.C. for this military district, is the director. Dr. G. L. Hodgins, formerly superintendent of Earl Grey sanitorium, and now lung specialist with the provincial branch of the department, has been temporarily appointed to succeed Dr. Arnold.

Lieutenant-Colonel Robert A. Bowie, M.D., C.M., second in command of the Ontario Military Hospital at Orpington, has been appointed consultant in surgery to Canadian headquarters in London. He was mentioned in despatches for his good work in France with the Canadian Army Medical Corps.

Lieutenant-Colonel David A. Clark, assistant director of medical services and officer in charge of medical personnel administration of militia headquarters, has been appointed assistant deputy minister of health. Colonel Clark has a splendid record in the war, previous to which he had been a militia officer for twenty years.

Major J. Cameron Wilson, M.D., since his return from overseas, has been appointed a coroner for London, Ontario, and county of Middlesex.

At the annual meeting of the Women's Auxiliary of the Canadian Army Medical Corps in Toronto, on October 3rd, the report of the treasurer showed receipts amounting to $1,452 and expenditures $1,230, leaving a balance on hand of $221. The report for the whole five years showed $7,288 received and $6,239 disbursed. During the five years since it was organized, the Auxiliary has sent overseas 178,655 articles.

A Board of medical consultants from military headquarters at Ottawa, consisting of Colonel I. H. Cameron, Lieutenant-Colonel Clarence Starr, and Lieutenant-Colonel H. C. Parsons, have been recently investigating the case of each patient in the New Brunswick Military Hospital, with a view to closing the hospital if the summing up of the situation will warrant such a decision. There are at present one hundred and nine cases there. On the closing of the hospital the building will be taken over by the Department of Soldiers' Civil Re-establishment.

Appointments:

Major Harry James Shields is posted for duty under the A.D.M.S., military district No. 2, as part time medical officer.

Major Percy James Sandys Bird is posted for duty under the A.D.M.S., military district No. 4.

Quartermaster and Honorary Lieutenant Albert Price Disley is posted for duty under the A.D.M.S., military district No. 2.

Major George Patrick Howbett is posted for duty under the A.D.M.S., military district No. 3.

Captain Charles Smith Henderson is posted for duty under the A.D.M.S., military district No. 6.

Captain Harry Knight Mitchell is posted for duty under the A.D.M.S., military district No. 10.

Major Darrell Porters Hannington is posted for duty under the A.D.M.S., military district No. 11.

Captain Robert Kells Johnston is posted for duty under the A.D.M.S., military district No. 3.

Captain Roswell Cameron Lyon is posted for duty under the A.D.M.S., military district No. 3.

Captain Sydney James Wood Horne is posted for duty under the A.D.M.S., military district No. 3.

Captain Oscar Glennie Donovan is posted for duty under the A.D.M.S., military district No. 6.

Captain James Walters Harper, C.A.M.C., is posted for duty under the A.D.M.S., military district No. 10.

Captain Phillip Doane McLaren is posted for duty under the A.D.M.S., military district No. 6.

Captain Herbert Charles Allison is posted for duty under the A.D.M.S., military district No. 1.

Captain Allan Martindale Yates, is posted for duty under the A.D.M.S., military district No. 1, and is granted the rank of Major whilst employed with effect from July 24th, 1919.

Acting Major Joseph William Hunt is posted for duty under the A.D.M.S., military district No. 2.

Captain Douglas Wallace is posted for duty under the A.D.M.S., military district No. 10, vice Captain R. B. Jenkins, October 5th, 1919

Quartermaster and Honorary Captain Arthur William Holmes is posted for duty under the A.D.M.S., D.G.M.S. Militia Headquarters, Ottawa, October 10th, 1919.

Captain Harold Ewing Preston is detailed for duty under the Director of Internment operations as medical officer in charge of party of insane prisoners of war being repatriated to Germany, October 25th, 1919.

Captain Morley Edward Gorman is detailed for special duty in the Directorate of the D.G.M.S. Militia Headquarters, Ottawa, October 16th, 1919.

Major John Phillip Selby Cathcart, M.C., is detailed for duty under the A.D.M.S., military district No. 2, October 6th, 1919.

Promotions.

The undermentioned Temporary Lieutenant-Colonels (acting Colonels to be Colonels):

C. P. Templeton, D.S.O., January 18th, 1919; E. L. Stone, August 1st, 1919; J. S. Jenkins, D.S.O., January 15th, 1919; C. Hunter, January 15th, 1919; W. T. Lochart, August, 1st 1919; C. E. F. Haszard, August 1st, 1919.

The undermentioned Temporary Captains (acting Majors to be Temporary Majors):

H. W. Wadge, M.C., January 15th, 1919; P. J. S. Bird, July 30th, 1919; J. D. Jones, August 1st, 1919; J. S. Fitzsimons, August 1st; J. W. Hunt, August 1st, 1919; A. B. Wilks, August 21st, 1919.

The undermentioned temporary Captains (acting Majors to be temporary Majors):

D. S. Morin, June 2nd, 1919; S. Sprague, August 9th, 1919; G. O. Scott, August 23rd, 1919

Temporary Major (acting) Lieutenant-Colonel F. E. Watts to be Lieutenant-Colonel, July 29th, 1919.

Temporary Captain A. N. Aitken relinquishes the acting rank of Major, August 23rd, 1919.

Temporary Major (acting Lieutenant-Colonel) L. H. McKim, relinquishes the acting rank of Lieutenant-Colonel June 25th, 1919.

Temporary Captain E. F. Risdon to be acting Major whilst employed as Officer-in-charge Canadian Section of Plastic Surgery, May 2nd, 1919.

Book Reviews

A Treatise on Orthopædic Surgery. By Royal Whitman, M.D., M.R.C.S., F.A.C.S., a director of military orthopædic teaching. Sixth edition, thoroughly revised; 916 pages, with illustrations. Price, $7.00. Publishers: Lea & Febiger, Philadelphia and New York, 1919.

Dr. Whitman's work on its first appearance established for itself a leading place in orthopædic literature, and it can be said that the present edition, which is the sixth, appearing in 1919, fully maintains the high reputation of the author. It is the most recent and in many respects the best book both for the student and the practitioner that we know of, and the modern orthopædist will find in it a great deal of value. The bibliographical references are particularly full and indicate a wide range of reading. Dr. Whitman adds to this edition a very valuable chapter on military orthopædic surgery which gives a good account of the newer work in this department. As he says: Orthopædic surgery has long since outgrown the limits suggested by its definition or by its practice in former times, and now includes many of the subjects which were previously considered to belong to the department of general surgery, such as in particular nerve injuries and amputations. There is no doubt that this overlapping of authority has resulted in substantial progress, and the general surgeon has certainly no grounds of complaint. It is again a question of "tools to the man who can use them". After all, the interests of the wounded soldier are paramount, and the general surgeon is as a rule not fully qualified to give the best service in the difficult problems concerned with the complete treatment of stiff joints, paralyzed muscles, and the fitting of prosthetic appliances. This chapter on military orthopædic surgery gives in detail the practice adopted in the manual of military orthopædic surgery adopted by the United States Army. It also takes up the cinematoplastic amputations of Putti and also the surgery of peripheral nerve injuries, and gives many useful diagrams. He goes on to discuss briefly reconstructive treatment. The book is characterized throughout by the evidence of the author's very extensive experience as well as by that of a close study of the literature.

E. A.

ELEMENTARY BACTERIOLOGY AND PROTOZOOLOGY. For the Use of Nurses. By HERBERT FOX, M.D., director of the William Pepper Laboratory of Clinical Medicine in the University of Pennsylvania. Third edition, thoroughly revised; 222 pages with illustrations. Price, $1.75. Publishers: Lea & Febiger, Philadelphia and New York, 1919.

This is a very well written and equally well illustrated handbook of bacteriology. If the nurse knows the rest of her work as thoroughly as she ought to know bacteriology after reading this book, she will be a very well informed person indeed. We wish the book all success.

CHRONIC TRAUMATIC OSTEOMYELITIS, ITS PATHOLOGY AND TREATMENT. By J. RENFREW WHITE, M.B., F.R.C.S., formerly resident surgical officer, Roy National Orthopædic Hospital, London. 144 pages, with illustrations. Price, 12/6 net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C. 1, 1919.

This is a good example of a monograph on an important subject by a specialist for specialists. No doubt the war taught Mr. White a great deal of what he deals with so clearly and concisely. If it is Mr. White's first book, he is to be congratulated on his appearance in medical literature. We hope the book will have a wide circulation.

APPLIED ANATOMY AND KINESIOLOGY. By WILBUR PARDON BOWEN, M.S., professor of physical education, Michigan State Normal College, Ypsilanti. Second edition, thoroughly revised, 334 pages. Illustrated with 197 engravings. Price, $3.50. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

This book contains a very clear exposition of the anatomy, physiology and physics of muscular action, not only such as is employed in "gymnastics" but in such an involuntary action as ordinary breathing. The illustrations could not be better. "Team work" is too colloquial an Americanism for "co-ordination" in so dignified a treatise; it would not be understood in some quite intelligent communities.

THE INTENSIVE TREATMENT OF SYPHILIS AND LOCOMOTOR ATAXIA BY AACHEN METHODS (with notes on Salvarsan). By REGINALD HAYES, M.R.C.S. Third edition, revised, 92 pages. Price, 4/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street London.

Although a small book, this is an important book. That it has reached its third edition in the four years since 1916 proves that medical men have found it useful. It deals in a practical and direct method with the treatment of those special worries of the neurologist, cerebral syphilis, general paralysis of the insane, spinal syphilis and locomotor ataxia. It will communicate many rays of hope in certain directions which hitherto have been dark indeed.

THE PRACTICAL MEDICINE SERIES. VOLUME I, GENERAL MEDICINE. Edited by FRANK BILLINGS, M.S., M.D., head of the medical department, and dean of the Faculty of Rush Medical College, Chicago. Series 1919. Price, $2.50. Publishers: The Year Book Publishers, 304 S. Dearborn Street, Chicago.

There should be a demand for the books in this series, owing to the large number of returned officers who will want to find out what has been going on while they have been away. This volume is excellent for getting an idea of the newer work. Its great use should be to stimulate further reading, as it does not pretend to give more than a brief reference to the different phases of the subjects treated.

THE PRINCIPLES OF NURSING. By CHARLOTTE A. BROWN, R.N., superintendent of nurses in the New England Hospital for Women and Children. 261 pages. Illustrated. Price, $1.75 Publishers; Lea & Febiger, 706 Sansom Street, Philadelphia, 1919.

This book has a great deal of information carefully arranged in a very concise form. It would be very useful for nurses who are preparing for examinations and where the main issue is to secure a pass, but it is not complete enough to be used as the only textbook on this subject in a first class training school. The type and printing are up to the usual high standard set by this publishing firm.

A. B. C.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANIMAL PARASITOLOGY, including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes. By E. R. STITT, A.B., PH.G., M.D., medical director, U. S. Navy. Fifth edition, revised and enlarged. 559 pages, with illustrations. Price, $2.50 net. Publishers: P. Blackiston Son & Co., 1012 Walnut Street, Philadelphia, 1919.

This is a good book. Its contents might be expanded to fill many volumes and find expression less clear. Its conciseness and general plan are admirable. The methodical arrangement of material and the definite statement of classification of pathogenic organisms will be gratefully read by students and practitioners alike. These features, no less than the clear and definite exposition of laboratory methods, make this practical book on Bacteriology, Blood Work and Animal Parasitology a true handbook. Those whose work brings them to laboratories, especially to laboratories where tropical and sub-tropical diseases are not unknown, can have under their hand no book that is better than this.

If the book has a fault, perhaps it may be found through the effort to incorporate the latest advances in knowledge; in some instances that effort has permitted certain minor points as yet incompletely established to be stated as though they were definitely acknowledged facts.

J. L. T.

Medical Societies

THE DISTRICT MEETING OF THE COUNTIES OF PETERBORO, VICTORIA, NORTHUMBERLAND AND DURHAM, HASTINGS, PRINCE EDWARD, AND LENNOX AND ADDINGTON

THE meeting was held in the Hotel Quinte, Belleville, on September 17th, 1919. The chair was taken by Dr. Farncomb, Trenton, the representative of the district in the Ontario Medical Council, and the success of the meeting was due in a large measure to his untiring efforts. All the counties included in the district were well represented, with the exception of Victoria.

Dr. Gibson, the nestor of the profession in Belleville district, gave an admirable paper on the treatment of simple fractures.

Dr. Third, Kingston, gave a clinical demonstration on the methods of examination of the heart, the lungs and the nervous system. He laid particular stress on the value of the exercise tests in heart cases, and the necessity for estimating the cardiac disability rather from the condition of the myocardium than from that of the valves. He explained the cardio-respiratory murmur and the Graham Steell murmur—both of which he had examples—and pointed out their prognostic significances.

He demonstrated his method of examining a suspected case of pulmonary tuberculosis, laying special stress on inspection and ausculation. The coarse reddish-brown hair was often suggestive. Next he advised looking for enlarged cervical glands—the tissues of all others, most sensitive to tuberculous infection. Coming to the chest, depression should be noted, also lagging of one or other apex on deep inspiration. A provisional diagnosis that would prove correct in 75 per cent. of the cases could be made from inspection alone. The presence of localized moist post-tussive râles, in the areas of predilection, practically clinched the diagnosis, no matter whether tubercle bacilli were found in the sputum or not.

The last case shown was one of ataxic paraplegia, the right leg giving the symptoms of a lateral pyramidal tract lesion—increased knee jerk, ankle clonus and extensor plantar response—while the left showed those of a lesion of the posterior columns. The gait was quite ataxic.

Doctors Faulkner and Tennant, Belleville, were thanked for bringing together such an interesting collection of cases for the clinic.

Dr. F. M. McCullough, Peterborough, prepared a paper on "Hæmorrhage in the New-born", which was read by Dr. Cameron Stewart in the unavoidable absence of the author. Dr. McCullough differentiated the various forms of melæna, and dealing especially with true melæna, spoke of the theories of its origin and laid stress on the brilliant results obtained by the use of serum and citrated mother's blood even when injected subcutaneously, but advocated the intravenous method in all severe cases.

Dr. D. S. Lighthall, Picton, gave a carefully prepared paper on pneumonia, and judging from the amount of discussion, it was one of the most interesting of the series.

Dr. W. W. McKinley, Port Hope, dealt with the "Tariff of Fees" in a most convincing address. Notwithstanding the in-

creased cost of living, of medical and surgical supplies, of car upkeep, etc., the medical fees in the district had advanced very little in the past twenty years. He contrasted the capital invested by the mechanic and the physician, the working hours of each and their net income, and lastly the selfishness of labour unions with the altruism of the medical profession. No class had done so much to improve the condition of labour as the medical profession. Working, not forty-four hours a week, but more often one hundred and sixty-eight in charitable institutions and homes to relieve suffering and prolong life, not asking whether the afflicted belonged to a union or not, and aiming at all times to improve the sanitary conditions of the factory, the workshop, the school, etc., the physician had ever kept to the simple path of duty, notwithstanding the unjust and unwarranted demands of labour. The situation had become simple intolerable. The profession must unite, and if needs be, give labour some of her own medicine.

After an excellent dinner at the Quinte, provided through the kindness of the Hastings branch, Dr. F. W. Marlow, Toronto, president of the Ontario Medical Association, gave an address on "Pelvic Inflammation", reviewing the whole subject in a delightfully lucid and masterly way. At the suggestion of several members, the address will be published in the near future, and distributed to those present at the meeting.

There were some features of this meeting that call for special comment. The attendance was large and representative. The discussion was general and was more of the nature of a "heart to heart" talk than that usually observed at the larger gatherings. Men from hamlet and town brought their everyday difficulties and laid them on the table and these were discussed freely, and in many cases, ably.

ONTARIO MEDICAL ASSOCIATION

Report of meeting of the Executive, held in the Academy of Medicine, Toronto, on Wednesday, September 24th, 1919.

At this meeting of the Executive, many matters of interest to the medical profession in Ontario were discussed and arranged.

Pursuant to instructions laid down at the last annual meeting of the Association, the Executive divided the Province of Ontario into ten Counsellor districts. This step was deemed advisable in order that each Counsellor might have a territory which would

enable him to render the best service to the profession in general and the Association in particular.

The following is a list of the Executive as now constituted:

President, Dr. F. W. Marlow, Toronto; first vice-president, Dr. J. H. Mullin, Hamilton; second vice-president, D. J. H. Farley, Trenton; honorary treasurer, Dr. G. Stewart Cameron, Peterboro; Hon. secretary, Dr. T. C. Routley, Toronto; Dr. J. A. Macgregor, London; Dr. E. R. Secord, Brantford; Dr. George S. Burt, Owen Sound; Dr. J. P. Morton, Hamilton; Dr. F. A. Clarkson, Toronto; Dr. T. S. Farncomb, Trenton; Dr. H. A. Boyce, Kingston; Dr. Fenton Argue, Ottawa; Dr. Edgar Brandon, North Bay; Dr. E. B. Oliver, Fort William.

It was also decided at this meeting that the fortieth annual meeting of the Ontario Medical Association would be held in Toronto on May 26th, 27th and 28th, with the Committee on General Purposes meeting on May 25th.

With regard to University Post-Graduate Extension Courses, it was decided to advise the committee in charge of this department to at once get into communication with the various medical faculties and the proefssion at large, in order that good may accrue to the profession. Members of the profession have already been selected to address district and county society meetings, and it is hoped that in the very near future a bureau will be established in the secretary's office which may be utilized by all local societies desiring the services of outside men to address them.

At an early date, each county and local society will receive definite instructions, accompanied by an application form for affiliation with the Ontario Medical Association, and it is particularly hoped that every society will give this important matter the attention which it deserves.

In order that the profession may be kept properly informed as to the activities of the Ontario Medical Association and the work of its Executive during the year, it was decided to have the report of the last business meeting of the Association printed for distribution to the county societies, and also to have synopses of the points of interest decided at Executive meetings forwarded to the various medical journals for publication.

The Canadian Medical Association Journal

With which is incorporated the MONTREAL MEDICAL JOURNAL and the MARITIME MEDICAL NEWS

CHAIRMAN OF EDITORIAL BOARD
A. D. BLACKADER

OLD SERIES VOL. XLVII
NEW SERIES VOL. IX.

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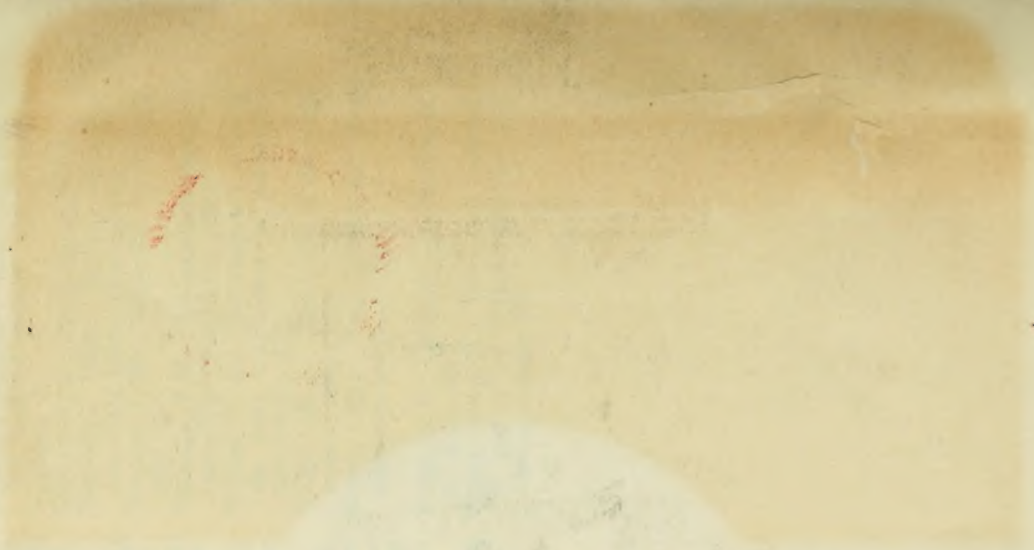

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